# Cisco Nexus 7000 Series Hardware Installation and Reference Guide

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# C O N T E N T S

**Cisco Nexus 7000 Series Hardware Installation and Reference Guide**

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# Preface

This preface describes the audience, organization, and conventions of the *Cisco Nexus 7000 Series Hardware Installation and Reference Guide*. It also provides information on how to obtain related documentation.

This preface includes the following sections:

- Audience, page ix
- Organization, page ix
- Document Conventions, page x
- Related Documentation, page xvi
- Obtaining Documentation and Submitting a Service Request, page xvii

## Audience

This guide is for experienced network system administrators who configure and maintain Cisco Nexus 7000 Series devices.

## Organization

This document is organized as follows:

| Chapter | Description |
|---------|-------------|
| Chapter 1, "Overview" | Provides an overview of the installation process. |
| Chapter 2, "Installing a Cisco Nexus 7010 Chassis" | Describes how to install the Cisco Nexus 7010 hardware components. |
| Chapter 3, "Installing a Cisco Nexus 7018 Chassis" | Describes how to install the Cisco Nexus 7018 hardware components. |
| Chapter 4, "Installing Power Supply Units" | Describes how to install the power supply units in the Cisco Nexus 7000 Series devices. |
| Chapter 5, "Connecting the Cisco Nexus 7000 Device to the Network" | Describes how to connect a Cisco Nexus 7000 Series device to AC power and the network. |

| Chapter | Description |
|---|---|
| Chapter 6, "Managing the Device Hardware" | Describes how to manage the hardware for the Cisco Nexus 7000 Series device. |
| Chapter 7, "Troubleshooting" | Describes how to troubleshoot the Cisco Nexus 7000 Series hardware. |
| Chapter 8, "Removal and Installation Procedures" | Describes how to replace Cisco Nexus 7000 Series components during system operations. |
| Appendix A, "Technical Specifications" | Provides system and site requirements that you should use for planning the installation of the Cisco Nexus 7000 Series device. |
| Appendix B, "Cable and Port Specifications" | Provides the specifications for the connection devices used to connect the Cisco Nexus 7000 Series device to the Internet. |
| Appendix C, "Chassis and Module LEDs" | Describes the device and module LEDs that indicate system conditions. |
| Appendix D, "Repacking the Cisco Nexus 7000 Series Device for Shipment" | Explains how you should repack the Cisco Nexus 7000 Series device in case you need to ship it. |
| Appendix E, "Site Preparation and Maintenance Records" | Provides contact information and a table for recording site records. |

# Document Conventions

Command descriptions use these conventions:

| Convention | Description |
|---|---|
| **boldface font** | Commands and keywords are in boldface. |
| *italic font* | Arguments for which you supply values are in italics. |
| [ ] | Elements in square brackets are optional. |
| [ x | y | z ] | Optional alternative keywords are grouped in brackets and separated by vertical bars. |
| string | A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks. |

Screen examples use these conventions:

| | |
|---|---|
| `screen font` | Terminal sessions and information that the switch displays are in screen font. |
| `boldface screen font` | Information you must enter is in boldface screen font. |
| `italic screen font` | Arguments for which you supply values are in italic screen font. |
| < > | Nonprinting characters, such as passwords, are in angle brackets. |
| [ ] | Default responses to system prompts are in square brackets. |
| !, # | An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line. |

This document uses the following conventions:

**Note** Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

**Caution** Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

**Warning** **IMPORTANT SAFETY INSTRUCTIONS**

**This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.**

**SAVE THESE INSTRUCTIONS**

**Waarschuwing** **BELANGRIJKE VEILIGHEIDSINSTRUCTIES**

**Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.**

**BEWAAR DEZE INSTRUCTIES**

**Varoitus** **TÄRKEITÄ TURVALLISUUSOHJEITA**

**Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.**

**SÄILYTÄ NÄMÄ OHJEET**

**Attention** **IMPORTANTES INFORMATIONS DE SÉCURITÉ**

**Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.**

**CONSERVEZ CES INFORMATIONS**

**Warnung**   **WICHTIGE SICHERHEITSHINWEISE**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

**BEWAHREN SIE DIESE HINWEISE GUT AUF.**

**Avvertenza**   **IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

**CONSERVARE QUESTE ISTRUZIONI**

**Advarsel**   **VIKTIGE SIKKERHETSINSTRUKSJONER**

Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.

**TA VARE PÅ DISSE INSTRUKSJONENE**

**Aviso**   **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

**GUARDE ESTAS INSTRUÇÕES**

**¡Advertencia!**   **INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

**GUARDE ESTAS INSTRUCCIONES**

Varning! **VIKTIGA SÄKERHETSANVISNINGAR**

**Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.**

**SPARA DESSA ANVISNINGAR**

Figyelem **FONTOS BIZTONSÁGI ELOÍRÁSOK**

**Ez a figyelmezeto jel veszélyre utal. Sérülésveszélyt rejto helyzetben van. Mielott bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplo figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján keresheto meg.**

**ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!**

Предупреждение **ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

**Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.**

**СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ**

警告 重要的安全性说明

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

警告 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

주의 중요 안전 지침

이 경고 기호는 위험을 나타냅니다. 작업자가 신체 부상을 일으킬 수 있는 위험한 환경에 있습니다. 장비에 작업을 수행하기 전에 전기 회로와 관련된 위험을 숙지하고 표준 작업 관례를 숙지하여 사고를 방지하십시오. 각 경고의 마지막 부분에 있는 경고문 번호를 참조하여 이 장치와 함께 제공되는 번역된 안전 경고문에서 해당 번역문을 찾으십시오.

이 지시 사항을 보관하십시오.

Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA

Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham o dispositivo.

GUARDE ESTAS INSTRUÇÕES

Advarsel VIGTIGE SIKKERHEDSANVISNINGER

Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for legemesbeskadigelse. Før du begynder arbejde på udstyr, skal du være opmærksom på de involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de oversatte advarsler, der fulgte med denne enhed.

GEM DISSE ANVISNINGER

تحذير إرشادات الأمان الهامة

يوضح رمز التحذير هذا وجود خطر. وهذا يعني أنك متواجد في مكان قد ينتج عنه التعرض لإصابات. قبل بدء العمل، احذر مخاطر التعرض للصدمات الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم رقم البيان الموجود في أخر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز.

قم بحفظ هذه الإرشادات

Upozorenje VAŽNE SIGURNOSNE NAPOMENE

Ovaj simbol upozorenja predstavlja opasnost. Nalazite se u situaciji koja može prouzročiti tjelesne ozljede. Prije rada s bilo kojim uređajem, morate razumjeti opasnosti vezane uz električne sklopove, te biti upoznati sa standardnim načinima izbjegavanja nesreća. U prevedenim sigurnosnim upozorenjima, priloženima uz uređaj, možete prema broju koji se nalazi uz pojedino upozorenje pronaći i njegov prijevod.

SAČUVAJTE OVE UPUTE

**Upozornění**     **DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY**

**Tento upozorňující symbol označuje nebezpečí. Jste v situaci, která by mohla způsobit nebezpečí úrazu. Před prací na jakémkoliv vybavení si uvědomte nebezpečí související s elektrickými obvody a seznamte se se standardními opatřeními pro předcházení úrazům. Podle čísla na konci každého upozornění vyhledejte jeho překlad v přeložených bezpečnostních upozorněních, která jsou přiložena k zařízení.**

**USCHOVEJTE TYTO POKYNY**

Προειδοποίηση     ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ

Αυτό το προειδοποιητικό σύμβολο σημαίνει κίνδυνο. Βρίσκεστε σε κατάσταση που μπορεί να προκαλέσει τραυματισμό. Πριν εργαστείτε σε οποιοδήποτε εξοπλισμό, να έχετε υπόψη σας τους κινδύνους που σχετίζονται με τα ηλεκτρικά κυκλώματα και να έχετε εξοικειωθεί με τις συνήθεις πρακτικές για την αποφυγή ατυχημάτων. Χρησιμοποιήστε τον αριθμό δήλωσης που παρέχεται στο τέλος κάθε προειδοποίησης, για να εντοπίσετε τη μετάφρασή της στις μεταφρασμένες προειδοποιήσεις ασφαλείας που συνοδεύουν τη συσκευή.

ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ

אזהרה     **הוראות בטיחות חשובות**

סימן אזהרה זה מסמל סכנה. אתה נמצא במצב העלול לגרום לפציעה. לפני שתעבוד עם ציוד כלשהו, עליך להיות מודע לסכנות הכרוכות במעגלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כד לאתר את התרגום באזהרות הבטיחות המתורגמות שמצורפות להתקן.

**שמור הוראות אלה**

Opomena     ВАЖНИ БЕЗБЕДНОСНИ НАПАТСТВИЈА
Симболот за предупредување значи опасност. Се наоѓате во ситуација што може да предизвика телесни повреди. Пред да работите со опремата, бидете свесни за ризикот што постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во преведените безбедносни предупредувања што се испорачани со уредот.
ЧУВАЈТЕ ГИ ОВИЕ НАПАТСТВИЈА

Ostrzeżenie WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA

Ten symbol ostrzeżenia oznacza niebezpieczeństwo. Zachodzi sytuacja, która może powodować obrażenia ciała. Przed przystąpieniem do prac przy urządzeniach należy zapoznać się z zagrożeniami związanymi z układami elektrycznymi oraz ze standardowymi środkami zapobiegania wypadkom. Na końcu każdego ostrzeżenia podano numer, na podstawie którego można odszukać tłumaczenie tego ostrzeżenia w dołączonym do urządzenia dokumencie z tłumaczeniami ostrzeżeń.

NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ

Upozornenie DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY

Tento varovný symbol označuje nebezpečenstvo. Nachádzate sa v situácii s nebezpečenstvom úrazu. Pred prácou na akomkoľvek vybavení si uvedomte nebezpečenstvo súvisiace s elektrickými obvodmi a oboznámte sa so štandardnými opatreniami na predchádzanie úrazom. Podľa čísla na konci každého upozornenia vyhľadajte jeho preklad v preložených bezpečnostných upozorneniach, ktoré sú priložené k zariadeniu.

USCHOVAJTE SI TENTO NÁVOD

# Related Documentation

Cisco Nexus 7000 Series documentation is available at the following URL:

*http://www.cisco.com/en/US/products/ps9402/tsd_products_support_series_home.html*

The documentation set for the Cisco Nexus 7000 Series includes the following documents:

### Release Notes

*Cisco NX-OS Release Notes, Release 4.0*

*Cisco Nexus 7000 Series FPGA/EPLD Upgrade Release Notes, Release 4.0*

### Hardware Documents

*Cisco Nexus 7000 Series Site Preparation Guide*

*Cisco Nexus 7000 Series Hardware Installation and Reference Guide*

*Cisco Nexus 7000 Series Regulatory Compliance and Safety Information*

*Cisco Nexus 7000 Series Connectivity Management Processor Configuration Guide*

### Software Documents

The Cisco Nexus 7000 Series ships with the Cisco NX-OS software. You can find software documentation for Cisco NX-OS at the following URL:

*http://www.cisco.com/en/US/products/ps9372/tsd_products_support_series_home.html*

The Cisco Data Center Network Manager (DCNM) supports the Cisco Nexus 7000 Series. You can find documentation for DCNM at the following URL:

*http://www.cisco.com/en/US/products/ps9369/tsd_products_support_series_home.html*

# Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

**CHAPTER 1**

# Overview

This chapter provides an overview of the Cisco Nexus 7000 Series device and includes the following sections:

- Cisco Nexus 7000 Series, page 1-1
- Preparing the Site, page 1-12
- Safety Guidelines, page 1-13
- Installation and Connection Guidelines, page 1-13
- Replacing Components, page 1-14

## Cisco Nexus 7000 Series

The Cisco Nexus 7000 Series systems are multiprotocol-capable, high-density, and high-performance devices that incorporate Ethernet/IP, virtualization, Layer 4 to Layer 7 services, and low-latency interconnect (LLI) technologies. The Cisco Nexus 7000 Series models are described in the following subsections:

- Cisco Nexus 7010 System, page 1-1
- Cisco Nexus 7018 System, page 1-6

### Cisco Nexus 7010 System

The Cisco Nexus 7010 chassis has 10 slots that allow for two supervisor modules and up to eight I/O modules. The chassis also holds up to five fabric modules, two system fan trays, two fabric fan trays, up to three power supply units, and a cable management system. The chassis also has a mounting bracket and four positioning handles (two on each side) that you use to install the chassis after you position it on a rack. Optionally, you can include an air filter and mid-frame doors.

Figure 1-1 identifies the standard features on the front and sides of the Cisco Nexus 7010 chassis, Figure 1-2 identifies the optional features on the front side of the chassis, and Figure 1-3 identifies the standard features on the rear of the chassis.

*Figure 1-1        Standard Hardware Features on the Front and Sides of the Cisco Nexus 7010 Chassis*



| 1 | Door for the cable management area | 2 | System status LEDs |
|---|---|---|---|
| 3 | Cable management area (upper routing portion can be removed if necessary) | 4 | Rack mount bracket (2)—one on each side |
| 5 | Handles used to reposition the chassis (do not lift the chassis with these handles—use a mechanical lift) | 6 | I/O modules (1 to 8) in slots 1 to 4 and 7 to 10—these modules are a combination of the following:<br><br>• 48-port 10/100/1000 modules<br><br>• 48-port 1-Gigabit Ethernet modules<br><br>• 32-port 10-Gigabit Ethernet modules |
| 7 | Supervisor modules (2) in slots 5 and 6 | 8 | Air intake (shown without the optional air filter) |

*Figure 1-2        Optional Hardware Features on the Front Side of the Cisco Nexus 7010 Chassis*
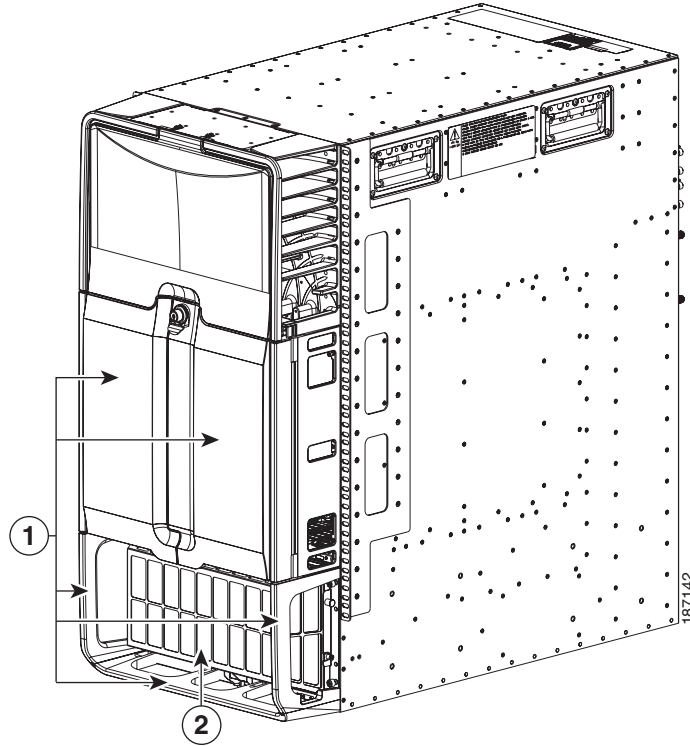


| **1** | Mid-frame door assembly | **2** | Air filter |
|---|---|---|---|

*Figure 1-3        Standard Hardware Features on the Back of the Cisco Nexus 7010 Chassis*
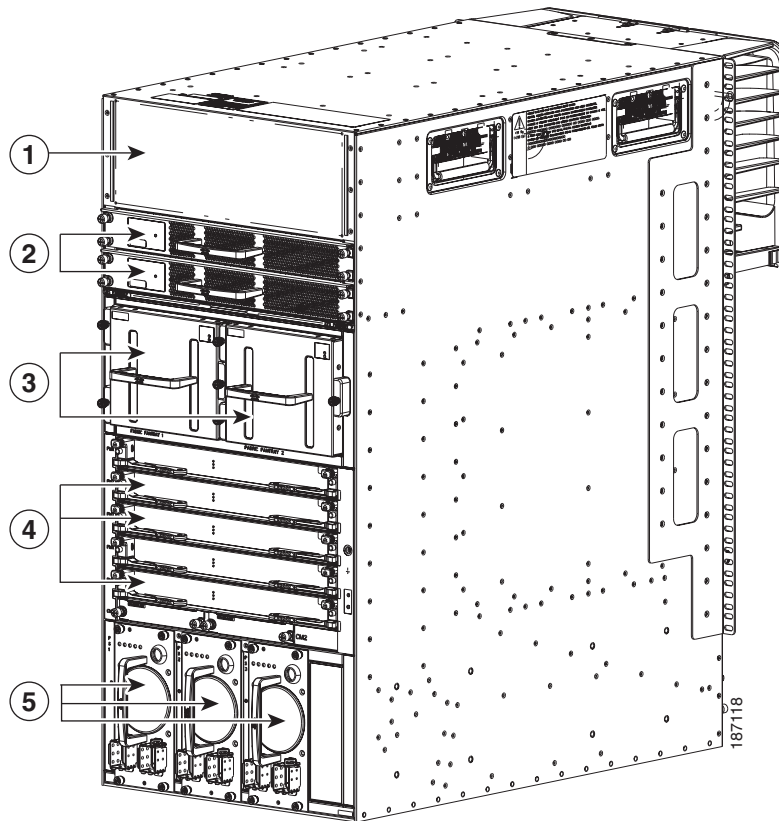


| 1 | Fan exhaust for the supervisor and I/O modules | 2 | System fan trays (2) and exhaust for the supervisor and I/O modules |
|---|---|---|---|
| 3 | Fabric fan trays (2) and exhaust for the fabric modules | 4 | Fabric modules (up to 5) |
| 5 | Power supply units (up to 3) and exhaust for the power supply units | | |

**Note** Figure 1-1 and Figure 1-3 show the Cisco Nexus 7000 Series chassis as it appears when it is fully configured before including cables for connections to the Internet and the console. The systems that are not fully configured with the maximum number of supervisor modules, I/O modules, fabric modules, or power supply units have blank panels installed in place of the missing components to maintain the designed airflow for system cooling.

You must install the Cisco Nexus 7010 system chassis in a four-post 19-inch EIA rack that meets the following specifications:

• Mounting rails that conform to the English universal hole spacing as specified in ANSI/EIA-310-D-1992.

• The minimum vertical rack space is 36.75 inches (93.3 cm) or 21 rack units (RU) for a single chassis installation and 73.5 inches (186.6 cm) or 42 rack units for a dual-chassis installation. We recommend that you use a 45 RU rack for a dual-chassis installation.

If you install one chassis, install it at the lowest possible RU on the rack for stability, as shown in Figure 1-4. If you install two chassis in the same rack, install the bottom chassis first and then install the other chassis on top as shown in Figure 1-5.

⚠ **Warning**    **Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.** Statement 1048

*Figure 1-4        One Cisco Nexus 7010 Chassis Installed in a Four-Post Rack*
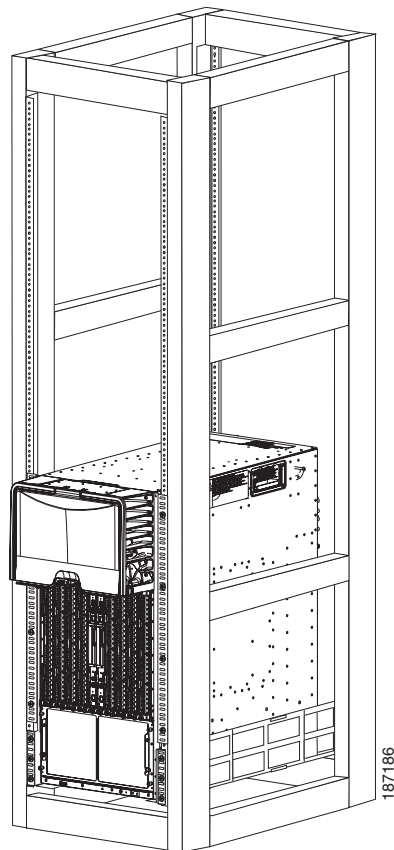


Install the first chassis  at the
bottom of the rack for maximum
stability.

*Figure 1-5        Two Cisco Nexus 7010 Chassis Installed in a Four-Post Rack*

Install a second chassis
immediately above the
first installed chassis.



187187
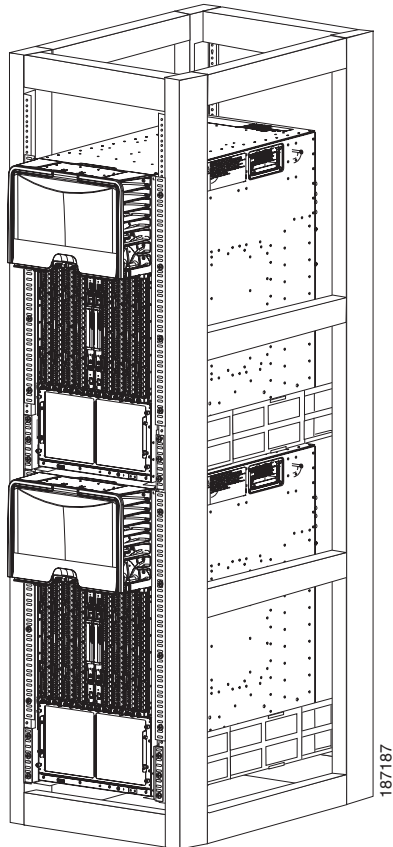
# Cisco Nexus 7018 System

The Cisco Nexus 7018 chassis has 18 slots that allow for two supervisor modules and up to 16 I/O modules. The chassis also holds up to five fabric modules, two fan trays, up to four power supply units, and a cable management system. The chassis also has a mounting bracket and four positioning handles (two on each side) that you use to install the chassis after you position it on a rack. Optionally, you can include a front door to protect the I/O cable connections.

Figure 1-6 identifies the standard features on the front and sides of the Cisco Nexus 7018 chassis, Figure 1-8 identifies the optional feature on the front side of the chassis, and Figure 1-9 identifies the standard features on the rear of the chassis.

*Figure 1-6       Standard Hardware Features on the Front and Sides of the Cisco Nexus 7018 Chassis*



| **1** | System status LEDs | **2** | Rack-mount brackets (2) |
|---|---|---|---|
| **3** | I/O modules (1 to 16) in slots 1 to 8 and 11 to 18—these modules are a combination of the following:<br>• 48-port 10/100/1000 modules<br>• 48-port 1-Gigabit Ethernet modules<br>• 32-port 10-Gigabit Ethernet modules | **4** | Supervisor modules (2) in slots 9 and 10 |
| **5** | Air intake for power supply units. | **6** | Air intake for the supervisor modules and I/O modules. |
| **7** | Air intake for fabric modules. | **8** | Handles used to reposition the chassis (do not lift the chassis with these handles—use a mechanical lift) |

*Figure 1-7        Cable Management System for the 7018 Chassis*
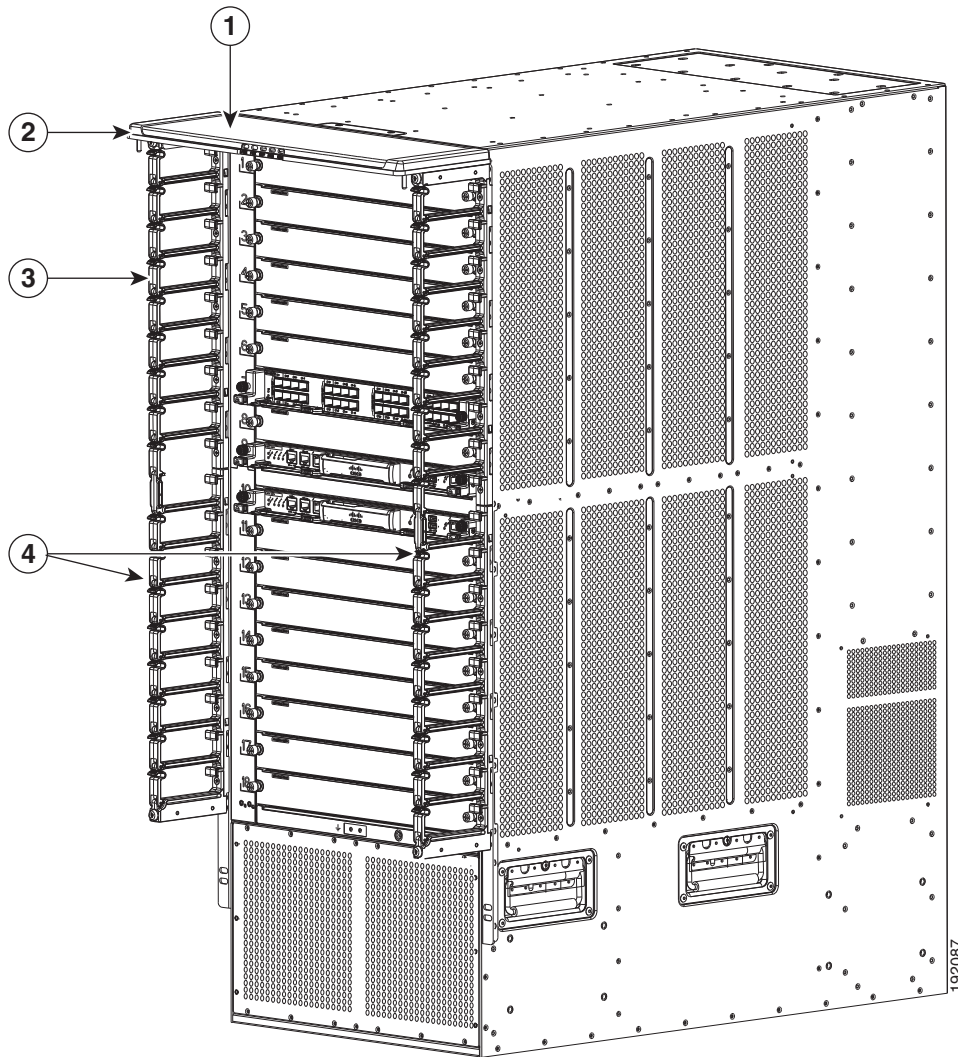


| 1 | System status LEDs (These LEDs show the system status displayed by the chassis LEDs.) | 2 | Top hood |
|---|---|---|---|
| 3 | Upper cable management assemblies | 4 | Lower cable management assemblies |

*Figure 1-8        Optional Front Door for the Cisco Nexus 7018 Chassis*
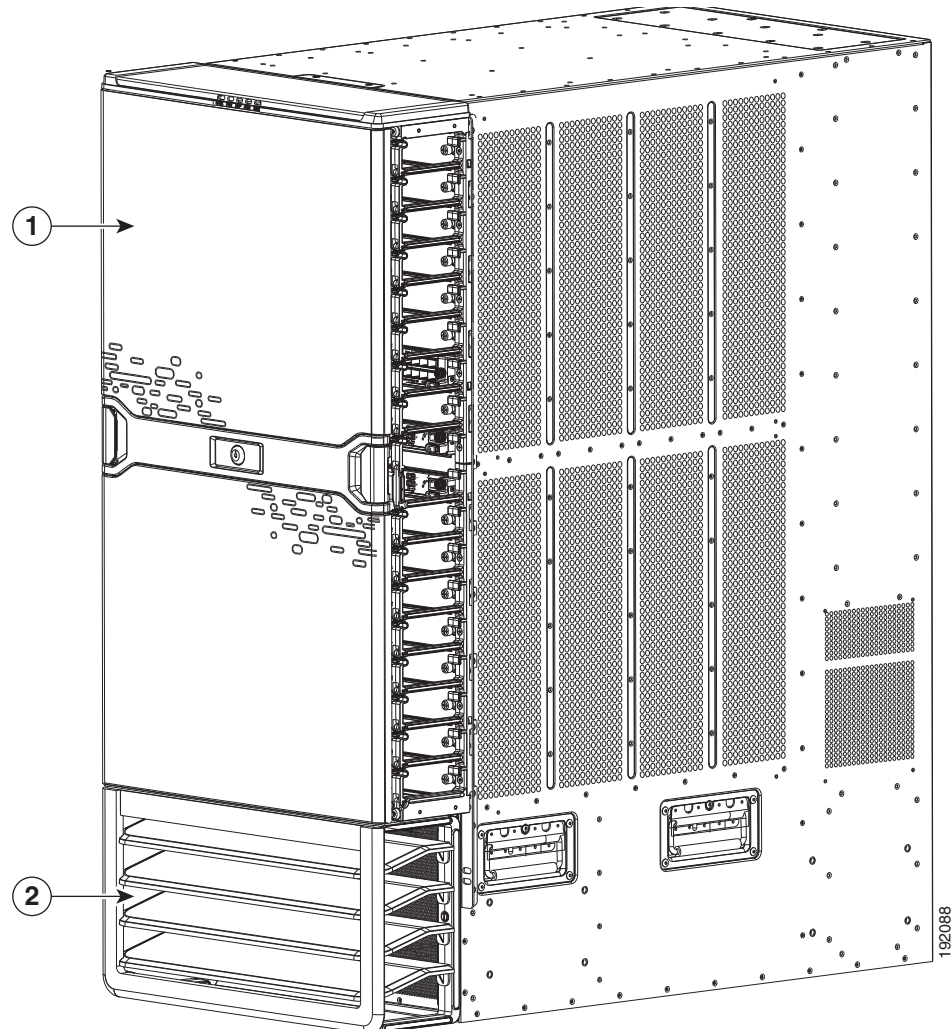


| **1** | Front doors | **2** | Air intake frame for power supply units |
|---|---|---|---|

*Figure 1-9        Standard Hardware Features on the Back of the Cisco Nexus 7018 Chassis*
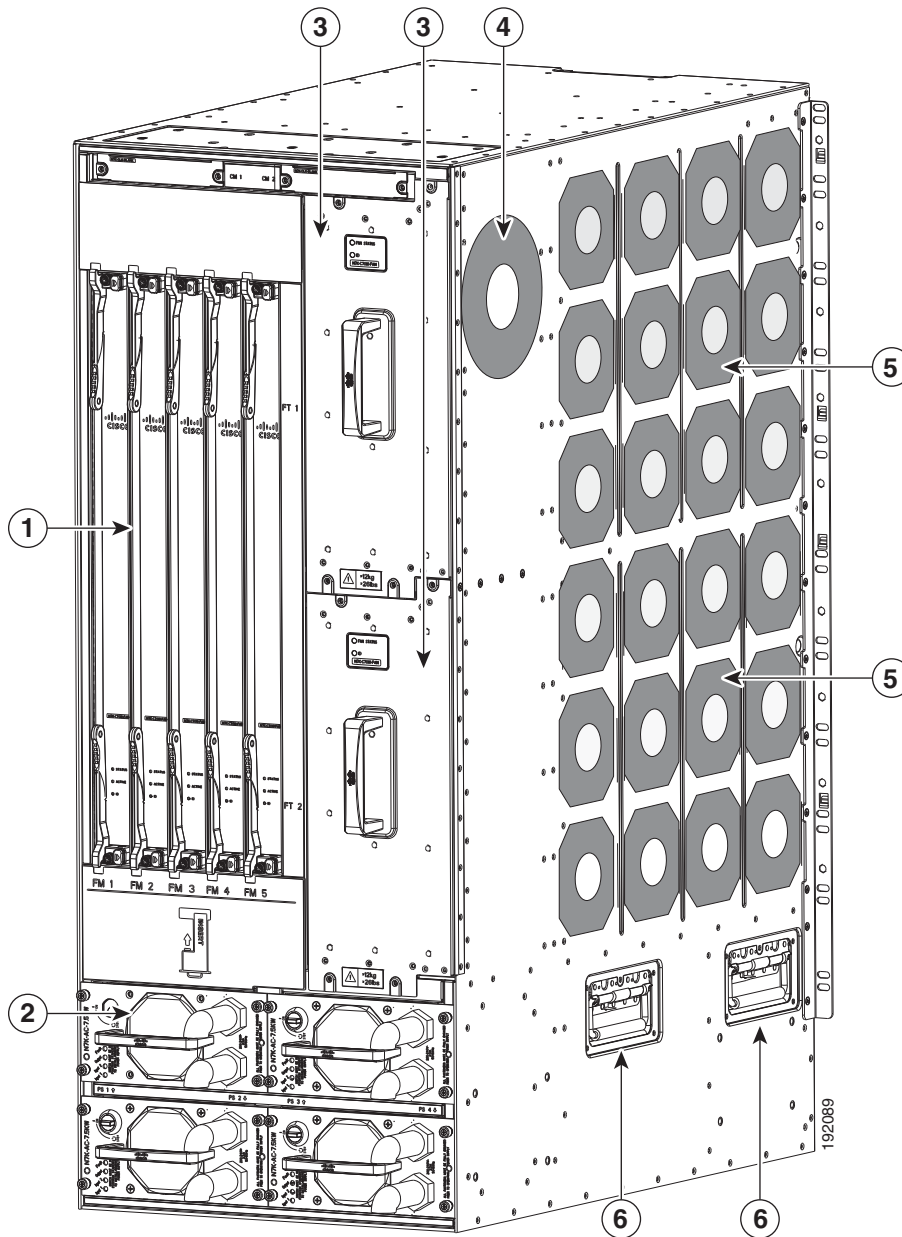


| 1 | Fabric modules (up to 5) | 2 | Power supply units (up to 4) |
|---|---|---|---|
| 3 | Fan trays for cooling the supervisor, I/O, and fabric modules | 4 | Fan exhaust for fabric modules |
| 5 | Fan exhaust for supervisor and I/O modules | 6 | Handles used to reposition the chassis (do not lift the chassis with these handles—use a mechanical lift) |

**Note**    Figure 1-6 and Figure 1-9 show the Cisco Nexus 7018 chassis as it appears when it is fully configured before including cables for connections to the Internet and the console. The systems that are not fully configured with the maximum number of supervisor modules, I/O modules, fabric modules, or power supply units have blank panels installed in place of the missing components to maintain the designed airflow for system cooling.

You must install the Cisco Nexus 7018 chassis in a four-post 19-inch EIA rack that meets the following specifications:

- Mounting rails that conform to the English universal hole spacing as specified in ANSI/EIA-310-D-1992.

- The minimum vertical rack space is 43.75 inches (111.1 cm) or 25 rack units (RU) for a single chassis installation and 87.5 inches (222.2 cm).

Install the Cisco Nexus 7018 chassis at the lowest possible RU on the rack for stability, as shown in Figure 1-10. If there is another device in the rack, install the heaviest one at the bottom.

**Warning**    **Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.** Statement 1048

*Figure 1-10       Cisco Nexus 7018 Chassis Installed in a Four-Post Rack*
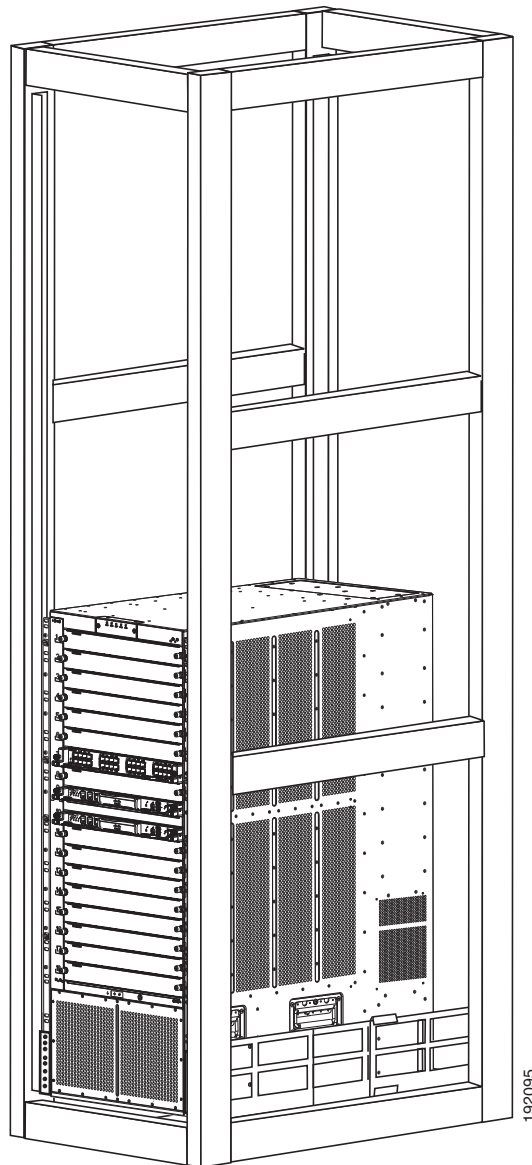


# Preparing the Site

⚠

**Warning**   **Installation of the equipment must comply with local and national electrical codes. Statement 1074**

Before you can install a Cisco Nexus 7000 Series system, you must prepare the site for the installation. You must make sure that the altitude, temperature, humidity, air quality, airflow, electromagnetic and radio frequency interference, floor structure, power, and earth grounding of the installation site all meet the requirements of the Cisco Nexus 7000 Series system that you are installing. In addition, you must

set up a rack or cabinet that can hold one or two chassis. To see the general requirements for this system, see Appendix A, "Technical Specifications." To see detailed information about preparing the data center for the installation, see the *Cisco Nexus 7000 Series Site Preparation Guide*.

# Safety Guidelines

**Warning**    **Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030**

The prerequisites listed for any procedure are required conditions that you must verify before you start that procedure. If the prerequisites have not been met, you must satisfy those requirements before carrying out the procedure.

Safety warnings appear in this publication wherever procedures present conditions that could endanger you or others installing this system. Adhering to these warnings and following their recommended actions are required actions for these procedures. For regulatory compliance and safety information on these warnings, see the *Cisco Nexus 7000 Series Regulatory Compliance and Safety Information* document.

# Installation and Connection Guidelines

After you fully prepare the site as specified in the *Cisco Nexus 7000 Series Site Preparation Guide*, install a four-post 19-inch EIA rack, and attach two bottom-support rails, you can begin installing the Cisco Nexus 7000 Series system. To install the system, you must load the chassis onto a mechanical lift, use the mechanical lift to position and elevate the chassis at its bottom-support rails on a rack or cabinet, push the chassis onto the rack or cabinet, and then secure the chassis to the rack or cabinet. With the chassis in place, you can install the power supply units and accessories and then connect the device to the console and network. For detailed instructions on installing a Cisco Nexus 7010 device, see the following chapters:

- Chapter 2, "Installing a Cisco Nexus 7010 Chassis."
- Chapter 3, "Installing a Cisco Nexus 7018 Chassis."
- Chapter 4, "Installing Power Supply Units."

For detailed instructions on connecting the device to the console and network, see Chapter 5, "Connecting the Cisco Nexus 7000 Device to the Network."

**Caution**    Do not use the handles on the side of the chassis to lift the chassis. Use these handles only for adjusting the position of the chassis while the chassis rests on a platform or bottom-support rails.

# Managing the System Hardware

After the Cisco Nexus 7000 Series system is installed and operating, you can use the Cisco NX-OS operating system to manage the system hardware. These management functions include displaying system and module information, setting the power supply modes, and managing module functions. For more information about these functions, see Chapter 6, "Managing the Device Hardware."

# Replacing Components

While the Cisco Nexus 7000 Series system is operational, you can replace any I/O module or any one of the following components if they are redundant:

- Power supply
- Supervisor module
- Fabric module
- System fan tray
- Fabric fan tray

For detailed information on replacing these components, see Chapter 8, "Removal and Installation Procedures."

**C H A P T E R 2**

# Installing a Cisco Nexus 7010 Chassis

This chapter describes how to install a new or relocated Cisco Nexus 7010 chassis in a rack or cabinet. For information about installing a Cisco Nexus 7018 chassis, see Chapter 3, "Installing a Cisco Nexus 7018 Chassis." For information about installing power supply units in the Cisco Nexus 7000 Series chassis, see Chapter 4, "Installing Power Supply Units."

This chapter includes the following sections:

- Preparing to Install the Device, page 2-1
- Installing the Bottom-Support Rails on the Rack, page 2-3
- Installing the Chassis, page 2-7
- Grounding the Cisco Nexus 7010 Chassis, page 2-11
- Installing and Formatting CompactFlash Cards, page 2-16

## Preparing to Install the Device

This section includes the following topics:

- Required Tools, page 2-1
- Installing a Four-Post Rack or Cabinet, page 2-2
- Unpacking and Inspecting a New Device, page 2-3

**Note** You must set up one four-post, 19-inch EIA rack or cabinet before you can install the Cisco Nexus 7010 chassis. Make sure that you order the rack or cabinet and have it delivered before installing the chassis.

## Required Tools

Before you install the Cisco Nexus 7010 chassis into a rack, make sure that you have the following tools and equipment:

- Mechanical lift capable of lifting 550 lbs (250 kg)
- No. 1 Phillips screwdriver with torque capability
- 3/16-inch flat-blade screwdriver
- Crimping tool

- Wire stripping tool
- Tape measure and level
- Grounding cable

**Note** These tools and equipment do not ship with the chassis.

Additional tools and equipment, such as an electrostatic discharge (ESD) wrist strap, that you will also need to install the Cisco Nexus 7010 chassis, are included in the Cisco Nexus 7010 accessory kit.

**Caution** When you handle the Cisco Nexus 7010 chassis or its components, you must follow ESD protocol at all times to prevent ESD damage. This protocol includes but is not limited to wearing an ESD wrist strap that you connect to the earth ground.

**Note** For a list of tools required to assemble and secure the four-post rack or cabinet, see the documentation that the manufacturer shipped with the rack or cabinet.

## Installing a Four-Post Rack or Cabinet

Before you install the Cisco Nexus 7010 chassis, you must install a standard four-post, 19-inch EIA data center rack (or a cabinet that contains such a rack) that meets the requirements listed in the *Cisco Nexus 7000 Series Site Preparation Guide*. To maximize safety, you should do the following for the rack:

- Bolt the rack to the concrete subfloor before moving the Cisco Nexus 7010 chassis onto it.

**Warning** **Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.** Statement 1048

- If the rack has bonded construction, connect it to the earth ground to enable you to easily ground the system components that you install and to ground your ESD wrist strap. This step minimizes the chance of electrostatic discharge when you handle ungrounded components before you install them.

Be sure that the rack includes AC power receptacles with the amperage required for the power supply units that you will be installing in the chassis. If you are installing 6-kW power supply units, you must have 20A circuits. If you are installing 7.5-kW power supply units, you must have 30A circuits.

**Warning** **Take care when connecting units to the supply circuit so that wiring is not overloaded.** Statement 1018

For instructions on setting up the rack, see the documentation that the manufacturer shipped with the rack.

## Unpacking and Inspecting a New Device

Before you install a new Cisco Nexus 7010 chassis, you need to unpack and inspect it to be sure that you have all the items that you ordered and verify that the device was not damaged during shipment. If anything is damaged or missing, contact your customer representative immediately.

**Tip**  Do not discard the shipping container when you unpack the Cisco Nexus 7010 system. Flatten the shipping cartons and store them with the pallet used for the system. If you need to move or ship the system in the future, you will need these containers. For repacking instructions, see Appendix D, "Repacking the Cisco Nexus 7000 Series Device for Shipment."

To inspect the shipment, follow these steps:

**Step 1**  Compare the shipment to the equipment list provided by your customer service representative and verify that you have received all of the ordered items. The shipment should include boxes for the following:

- System chassis, which includes the following components:
  - 2 supervisor modules
  - 1 to 8 I/O modules
  - 3 to 5 fabric modules
  - 2 system fan trays
  - 2 fabric fan trays
- 2 to 3 power supply units

  The power supply units are shipped with the chassis but boxed separately.

- Cisco Nexus 7010 system accessory kit

  To see a list of what is in the accessory kit, see the *Cisco Nexus 7010 System Accessory Kit Contents* document, which is included in the kit.

- Mid-chassis doors and frame (optional)
- Air filter (optional)

**Step 2**  Check the contents of each box or package for damage.

**Step 3**  If you notice any discrepancies or damage, send the following information to your customer service representative by e-mail:

- Invoice number of the shipper (see the packing slip)
- Model and serial number of the missing or damaged unit
- Description of the problem and how it affects the installation

# Installing the Bottom-Support Rails on the Rack

The bottom-support rails hold the Cisco Nexus 7010 chassis on the rack or cabinet. To maximize the stability of the rack, you must attach these rails at the lowest possible rack unit (RU).

The prerequisites, tools, and process for installing the bottom-support rails are included in the following topics:

- Prerequisites for Attaching the Bottom-Support Rails, page 2-4
- Required Tools and Equipment, page 2-4
- Attaching the Bottom-Support Rails, page 2-4

# Prerequisites for Attaching the Bottom-Support Rails

Before you can attach the bottom-support rails, you must fully install the rack or cabinet, and should, for maximum stability, bolt the rack or cabinet to the concrete subfloor. If anything lighter than the Cisco Nexus 7010 system is already installed in the rack, you should make sure that it is positioned above where you will be installing the Cisco Nexus 7010 system. Also, you must have the bottom-support rail kit, which ships with the Cisco Nexus 7010 system accessory kit. The distance between the front and rear mounting brackets on the rack or cabinet must be between 24 and 36 inches (60.96 and 81.28 cm) to fit the bottom-support rails.

# Required Tools and Equipment

You need the following tools and equipment to attach the bottom-support rails:

- No. 1 Phillips screwdriver.
- Rack-mount kit (shipped with the accessory kit). Table 2-1 lists the items in the rack-mount kit.

*Table 2-1        Contents for the Rack-Mount Kit*

| Part Description | Quantity |
|---|---|
| 12-24 x 3/4 in. Phillips screws | 20 |
| M6 x 19 mm Phillips screws | 20 |
| Adjustable bottom-support rails | 2 |

# Attaching the Bottom-Support Rails

To maximize the stability of the rack, you should install the chassis as low as possible on the rack. Install the heaviest system first at the bottom of the rack. If you install a second system in the same rack, install it immediately above the lower system if there is enough vertical space.

**Warning**    **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- **This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**
- **When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**
- **If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.** Statement 1006

To attach the bottom-support rails to a four-post EIA rack, follow these steps:

**Step 1**    Position one of the two adjustable bottom-support rails at the lowest possible RU. If you are installing a chassis above another Cisco Nexus 7010 chassis, position the rail 36.75 inches (93.4 cm) (21 RU) above the bottom-support rails for the lower chassis as shown in Figure 2-1. Adjust the length of the rail so that it stretches from the outer edges of the front and rear vertical mounting rails. You can expand the rail so that its mounting brackets are spaced between 24 to 32 inches (60.96 to 81.28 cm).

*Figure 2-1        Positioning the Bottom-Support Rails*
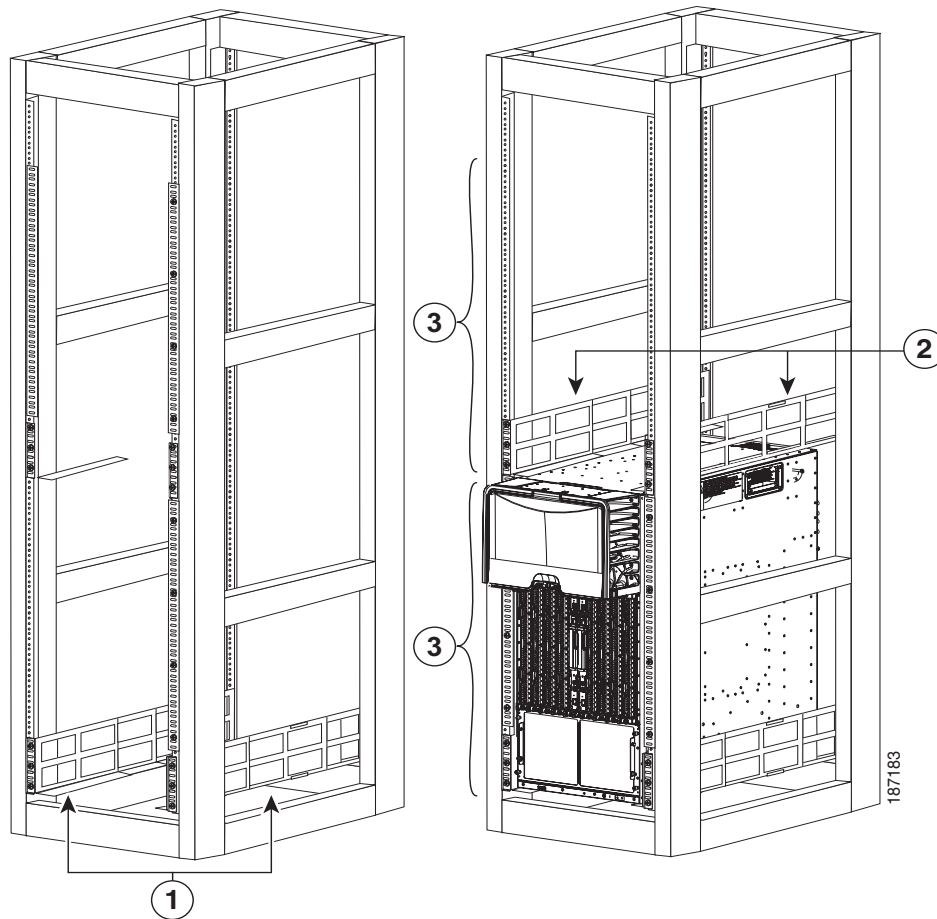


| 1 | For the first and heaviest Cisco Nexus 7010 chassis installed in a rack, position two bottom-support rails at the lowest RU on the rack. | 2 | For the second Cisco Nexus 7010 chassis installed in a rack, position two bottom-support rails immediately above the first installed device. |
|---|---|---|---|
| 3 | Allow at least 36.75 inches (93.4 cm) (21 RU) for each Cisco Nexus 7010 system. | | |

**Step 2**    Use a Phillips screwdriver to screw in three M6 x 19 mm or 12-24 x 3/4 in. Phillips screws on each end of each rail (using a total of 12 screws for both brackets) as shown in Figure 2-2.

*Figure 2-2       Attaching a Bottom-Support Rail to a Rack*
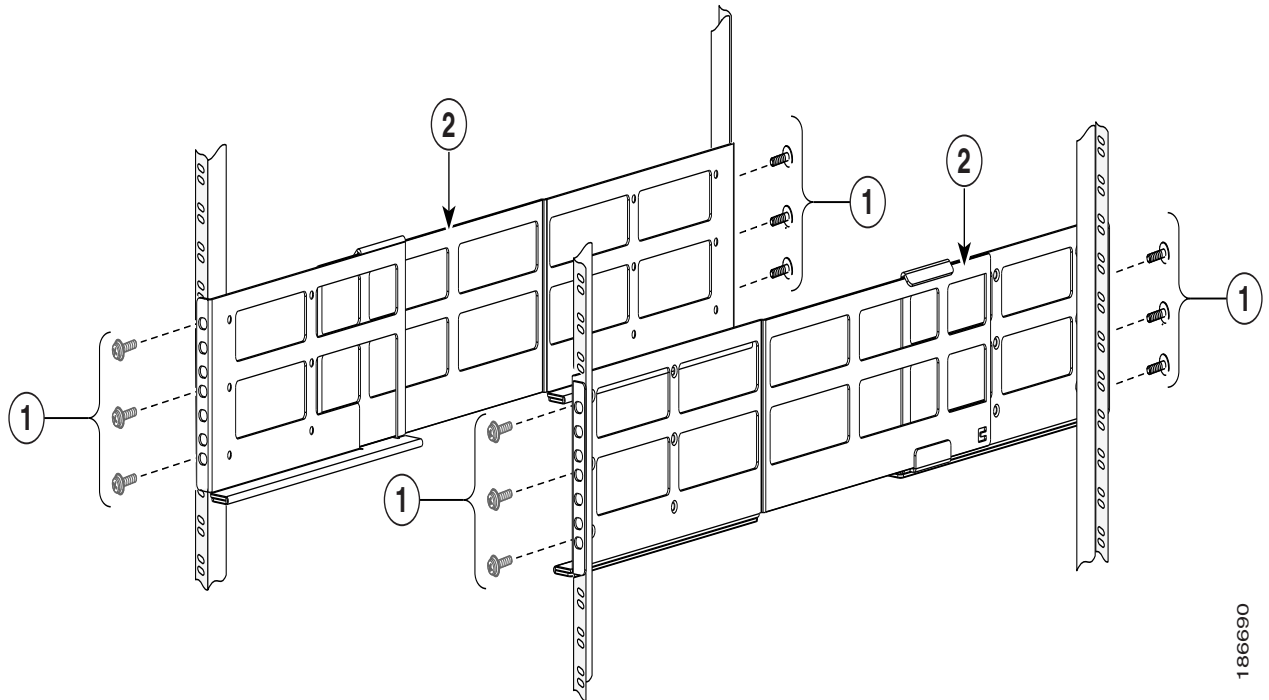


| **1** | Four sets of 3 M6 x 19 mm Phillips screws or four sets of 3 12-24 x 3/4 in. Phillips screws | **2** | Adjustable bottom-support rails (2) |
|---|---|---|---|

# Installing the Chassis

This section describes how to install the Cisco Nexus 7010 chassis in a rack or cabinet. These installation steps include transporting the chassis, elevating the chassis to the rack using a mechanical lift, pushing the chassis onto the rack, and then securing the chassis to the rack.

This section includes the following topics:

- Prerequisites for Installing the Chassis, page 2-8
- Required Tools and Equipment, page 2-8
- Installing the Chassis, page 2-9

# Prerequisites for Installing the Chassis

Before you install the chassis, you must make sure that the following items are available for the installation:

- Data center ground is accessible where you are installing the Cisco Nexus 7010 chassis
- Four-post, 19-inch, EIA rack or cabinet that includes such a rack

  For more information on the rack or cabinet, see the "Installing a Four-Post Rack or Cabinet" section on page 2-2.

**Warning**    **Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.** Statement 1048

- Bottom-support rails installed in the rack or cabinet—You must already have two bottom-support rails attached to the lowest possible rack unit on the chassis.

  For more information, see the "Installing the Bottom-Support Rails on the Rack" section on page 2-3.

**Warning**    **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- **This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**
- **When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**
- **If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.** Statement 1006

- Cisco Nexus 7010 chassis and its components are accounted for and undamaged

  For more information, see the "Unpacking and Inspecting a New Device" section on page 2-3.

# Required Tools and Equipment

You need the following tools and equipment to install the Cisco Nexus 7010 chassis:

- Mechanical lift capable of lifting at least 550 lbs (250 kg)
- No. 1 Phillips screwdriver
- Bottom-support rails kit (shipped with the Cisco Nexus 7010 system accessory kit)

  Part of this kit has already been used to install the bottom-support rails. Table 2-2 lists the items in the rack-mount kit.

*Table 2-2        Contents for the Rack-Mount Kit*

| Part Description | Quantity |
|---|---|
| 12-24 x 3/4 in. Phillips screws | 20 |
| M6 x 19 mm Phillips screws | 20 |
| Adjustable bottom-support rails | 2 |

✎ **Note**  You should also have at least four people to push the chassis, which can weigh up to 550 lbs (250 kg), onto and off the mechanical lift and rack.

# Installing the Chassis

To install a Cisco Nexus 7010 chassis in a four-post rack or cabinet, follow these steps:

**Step 1**    Load the chassis onto a mechanical lift as follows:

  **a.** Position the mechanical lift next to the shipping pallet that holds the chassis.

  **b.** Elevate the lift platform to the level of the bottom of the chassis (or no more than 1/4 inch [0.635 cm] below the bottom of the chassis).

  **c.** Use at least four persons to slide the chassis fully onto the lift so that the side of the chassis touches or is close to the vertical rails on the lift. Make sure that the front and rear of the chassis are unobstructed so you can easily push the chassis into the rack.

⚠ **Warning**    **To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.** Statement 1032

⚠ **Caution**    To lift the chassis, use a mechanical lift, not the handles on the side of the chassis. Use the side handles for only repositioning the chassis after it is already on the mechanical lift or in the rack or cabinet.

**Step 2**    Use the mechanical lift to move and align the rear of the chassis to the front of the four-post rack or cabinet. Make sure that the bottom of the chassis is elevated to the height of the bottom-support rails or no more than 1/4 inch (0.635 cm) above the bracket.

**Step 3**    Use at least four persons to push the chassis onto the installed bottom-support rails as shown in Figure 2-3.

Push the lower half of the front side of the chassis so that the back side enters the rack first, and push until the chassis mounting brackets come in contact with the front vertical mounting rails on the rack.

*Figure 2-3        Moving a Cisco Nexus 7010 Chassis onto a Rack*



| 1 | Push the lower half of the front side of the chassis | 2 | Chassis mounting brackets |
|---|---|---|---|
| 3 | Rack vertical mounting rails | | |

**Step 4**    Make sure that the screw holes in the chassis mounting brackets align with the screw holes in the vertical mounting rails.

If you need to reposition the chassis to align the screw holes, you can use the handles on the sides of the chassis.

**Tip**    To adjust the placement of the chassis so that the screw holes in the chassis mounting brackets align with the screw holes in the vertical mounting rails, use the chassis handles shown in Figure 2-4.

**Step 5**    Use a Phillips screwdriver to screw in four M6 x 19-mm or 12-24 x 3/4-inch screws in each of the two chassis mounting brackets (use a total of eight screws for two mounting brackets) as shown in Figure 2-4.

*Figure 2-4        Attaching the Cisco Nexus 7010 Chassis to the Rack*
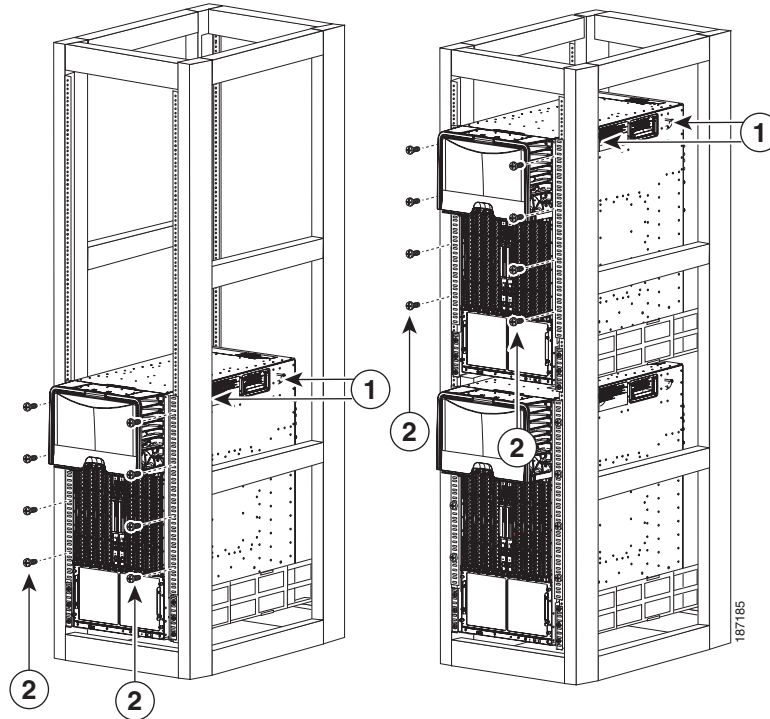


| **1** | Handles used to adjust the chassis placement. | **2** | Four M6 x 19 mm or 10-24 x 3/4 in. Phillips screws used to attach each side bracket to a front mounting rail (use a total of eight screws) |
|---|---|---|---|

# Grounding the Cisco Nexus 7010 Chassis

The Cisco Nexus 7010 system is grounded through the AC power supply cables and one of two grounding connections on the chassis. The AC power supply cables provide a connection to an earth ground whenever you connect the AC power to the system. The system ground, also referred to as the network equipment building system (NEBS) ground, provides additional grounding for EMI shielding requirements and for the low-voltage supplies (DC-DC converters) on the modules. This grounding system is active even when the AC power cables are not connected to the system. You establish this ground by connecting one of the two grounding pads on the chassis to the rack (if it is connected to an earth ground) or directly to the earth ground for the data center building.

This section includes the following topics:

- Prerequisites for Grounding the Chassis, page 2-12

- Required Tools and Equipment, page 2-12

- Connecting the System Ground, page 2-12

- Connecting Your ESD Strap to the Chassis, page 2-14

# Prerequisites for Grounding the Chassis

Before you can ground the chassis, you must have a connection to the earth ground for the data center building. If you installed the Cisco Nexus 7010 chassis into a bonded rack (see the rack manufacturer's instructions for more information) that now has a connection to the data center earth ground, you can ground the chassis by connecting its grounding ports to the rack. Otherwise, you must connect the chassis grounding ports directly to the data center ground.

# Required Tools and Equipment

To connect the system ground, you need the following tools and materials:

- Grounding lug—A two-holed standard barrel lug that supports up to 6 AWG wire. This lug is supplied with the Cisco Nexus 7010 system accessory kit.

- Grounding screws—Two M4 x 8 mm (metric) pan-head screws. These screws are shipped with the Cisco Nexus 7010 accessory kit.

- Grounding wire—Not supplied with the Cisco Nexus 7010 system accessory kit. This wire should be sized to meet local and national installation requirements. Depending on the power supply and system, a 12 AWG to 6 AWG copper conductor is required for U.S. installations. We recommend that you use commercially available 6 AWG wire. The length of the grounding wire depends on the proximity of the switch to proper grounding facilities.

- No. 1 Phillips screwdriver.

- Crimping tool to crimp the grounding wire to the grounding lug.

- Wire-stripping tool to remove the insulation from the grounding wire.

# Connecting the System Ground

After you have moved the chassis into the rack or cabinet, you are ready to connect the system to the data center earth ground. After you ground the chassis, you can ground your ESD wrist strap by connecting it to the chassis.

To connect the system ground to the data center earth ground, follow these steps:

**Step 1**  Use a wire-stripping tool to remove approximately 0.75 inch (19 mm) of the covering from the end of the grounding wire.

**Step 2**  Insert the stripped end of the grounding wire into the open end of the grounding lug as shown in Figure 2-5.

*Figure 2-5*        *Inserting the Grounding Wire in the Grounding Lug*

| **1** | NRTL listed 45-degree grounding lug | **2** | Grounding cable with 0.75 in. of insulation stripped from the end |
|---|---|---|---|

**Step 3**    Use the crimping tool to crimp the lug to the grounding wire. Verify that the ground wire is securely attached to the ground lug by attempting to pull the wire out of the crimped lug.

**Step 4**    Remove the adhesive label from one of the two system grounding pads, and secure the grounding wire lug to the grounding pad with two M4 screws. Figure 2-6 shows the location of the grounding pads on the front side of the chassis. Figure 2-7 shows the location on the rear of the chassis. Ensure that the grounding lug and the grounding wire do not interfere with other device hardware or rack equipment.

*Figure 2-6    Grounding Port on the Front of the Cisco Nexus 7010 Chassis*
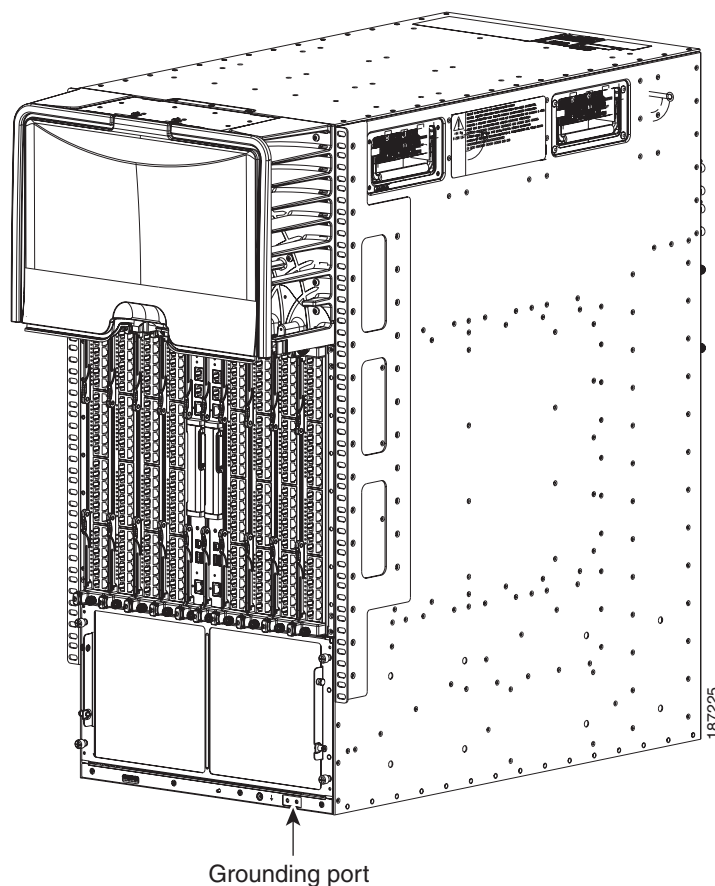


Grounding port

*Figure 2-7        Grounding Port on the Rear of the Cisco Nexus 7010 Chassis*
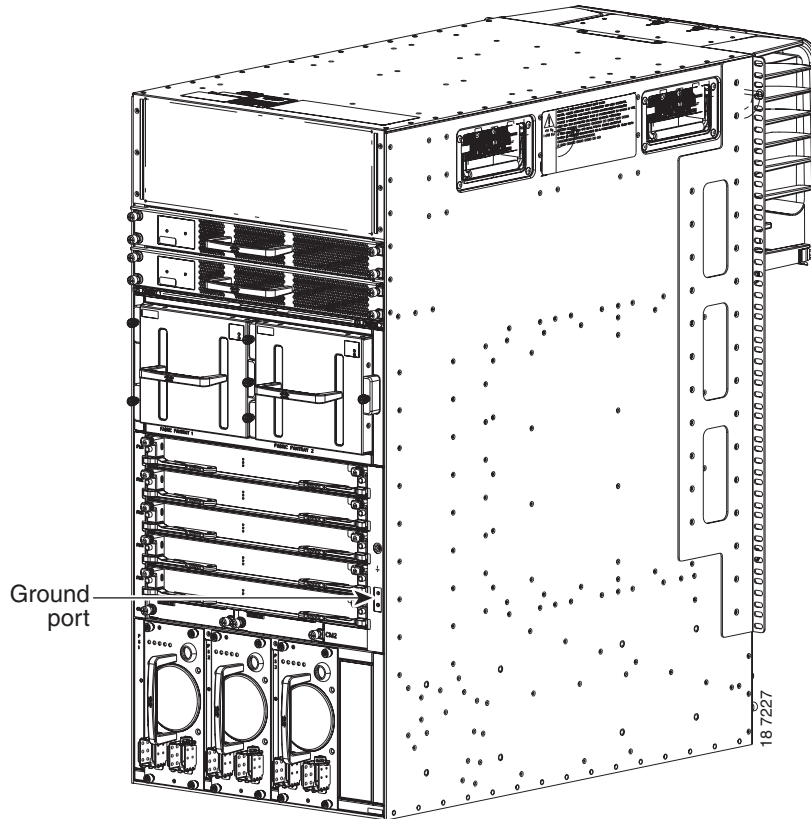


Ground port

**Step 5**    Prepare the other end of the grounding wire and connect it to an appropriate grounding point in your site to ensure an adequate earth ground for the device. If the rack is grounded, connect the grounding wire as explained in the documentation provided by the vendor for the rack.

# Connecting Your ESD Strap to the Chassis

After you connect the chassis to the data center earth ground, you can ground your ESD strap by plugging it into any one of three ESD ports shown in Figure 2-8 (front of the chassis) or Figure 2-9 (rear of the chassis).

*Figure 2-8        ESD Grounding Ports on the Front of the Cisco Nexus 7010 Chassis*
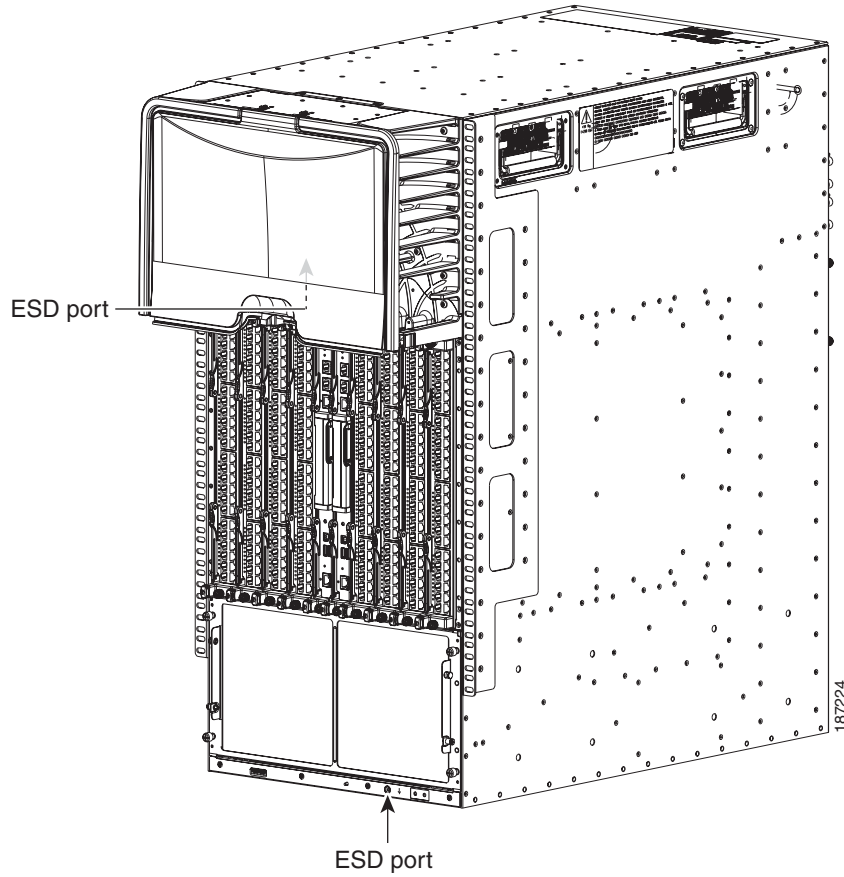
*Figure 2-9        ESD Grounding Port on the Rear of the Cisco Nexus 7010 Chassis*



ESD port

187226
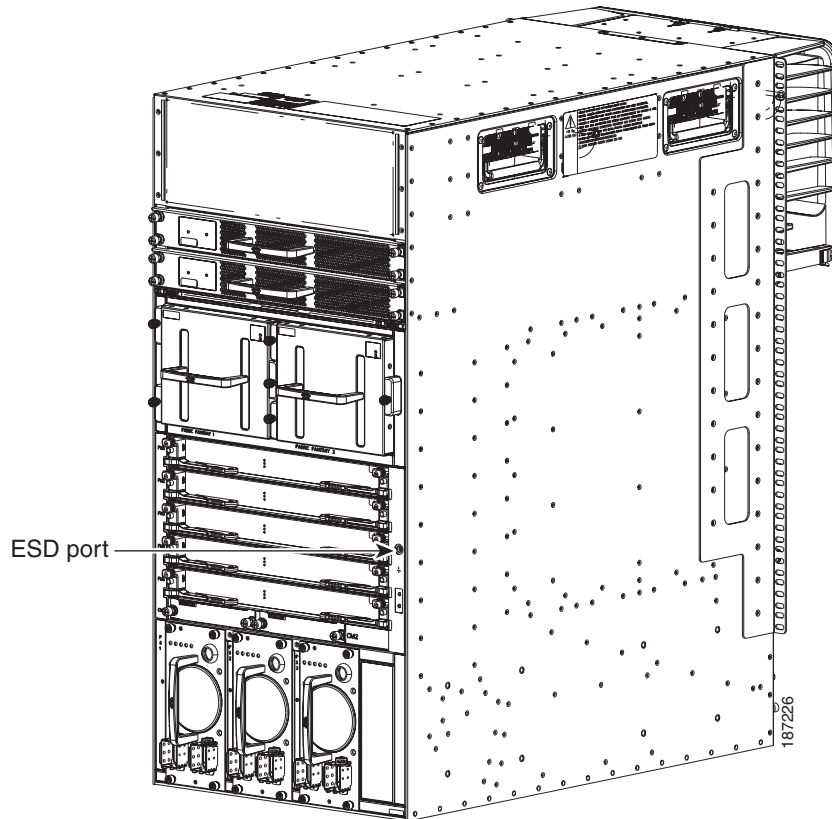
# Installing and Formatting CompactFlash Cards

Each supervisor module on a Cisco Nexus 7000 Series device is shipped with a CompactFlash card installed in the LOG FLASH reader. The EXPANSION FLASH reader is left empty, but you can optionally install a card in that reader. For the card to function with the reader, you must make sure that it is either formatted for the reader before installing it or format it after installing it.

**Note**  The LOG FLASH and EXPANSION FLASH readers require different formats for their cards.

To replace an installed CompactFlash card, see the "Replacing a CompactFlash Card" section on page 8-15.

To install a CompactFlash card, follow these steps:

**Step 1**  Align the card with the slot for the CompactFlash reader slot labeled LOG FLASH or EXPANSION FLASH as shown in Figure 2-10. The grooves on the thin side of the card must begin on the end of the card that goes into the reader first.

*Figure 2-10*    *Aligning a CompactFlash Card to its Reader*



**Step 2**    Push the card all the way into the reader.

If the card does not fit easily into the reader, flip the card so the bottom edge is on top, and try pushing the card into the reader.

**Step 3**    Wait for the reader LED to turn green and for a message to appear on the console as follows:

- If you are installing a card into the log flash reader, the message will end with "logflash:online."

```
switch# 2008 Mar 15 08:00:00 switch %$ VDC-1 %$ %IDEHSD-2-MOUNT: logflash:online
```

- If you are installing a card into the expansion flash reader, the message will end with "slot0:online."

```
switch# 2008 Mar 15 08:00:00 switch %$ VDC-1 %$ %IDEHSD-2-MOUNT: slot0:online
```

- If you see an offline message or do not see a message, either the card is not fully pushed into the reader or it is improperly formatted.

```
switch# 2008 Dec 1 12:00:00 switch %$ VDC-1 %$ %IDEHSD-2-UMOUNT:logflash:offline
```

Make sure that the card is fully inserted inside the reader. If the card is fully inserted, either format the card (see the *Cisco NX-OS Fundamentals Configuration Guide, Release 4.0*) or replace the card with another card that is properly formatted for the reader (see the "Replacing a CompactFlash Card" section on page 8-15).

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**C H A P T E R 3**

# Installing a Cisco Nexus 7018 Chassis

This chapter describes how to install a new or relocated Cisco Nexus 7018 chassis in a rack or cabinet. For information about installing a Cisco Nexus 7010 chassis, see Chapter 2, "Installing a Cisco Nexus 7010 Chassis." For information about installing power supply units in the Cisco Nexus 7000 Series chassis, see Chapter 4, "Installing Power Supply Units."

This chapter includes the following sections:

## Preparing to Install the Device

This section includes the following topics:

**Note** You must have one four-post, 19-inch EIA rack or cabinet before you can install the Cisco Nexus 7018 chassis. Make sure that you order the rack or cabinet and have it delivered before installing the chassis.

## Required Tools

Before you install the Cisco Nexus 7018 chassis into a rack, make sure that you have the following tools and equipment:

- Mechanical lift capable of lifting 700 lbs (318 kg)
- No. 1 Phillips screwdriver with torque capability

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- 3/16-inch flat-blade screwdriver
- Crimping tool
- Wire stripping tool
- Tape measure and level
- Grounding cable

**Note**   These tools and equipment do not ship with the chassis.

Additional tools and equipment, such as an electrostatic discharge (ESD) wrist strap, that you will also need to install the Cisco Nexus 7018 chassis, are included in the Cisco Nexus 7018 accessory kit.

**Caution**   When you handle the Cisco Nexus 7018 chassis or its components, you must follow ESD protocol at all times to prevent ESD damage. This protocol includes but is not limited to wearing an ESD wrist strap that you connect to the earth ground.

**Note**   For a list of tools required to assemble and secure the four-post rack or cabinet, see the documentation that the manufacturer shipped with the rack or cabinet.

## Installing a Four-Post Rack or Cabinet

Before you install the device, you must install a standard four-post, 19-inch EIA data center rack (or in a cabinet that contains such a rack) that meets the requirements listed in the *Cisco Nexus 7000 Series Site Preparation Guide*. To maximize safety, you should do the following for the rack:

- Bolt the rack to the concrete subfloor before moving the Cisco Nexus 7018 chassis onto it.

**Warning**   **Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.** Statement 1048

- If the rack has bonded construction, connect it to the earth ground to enable you to easily ground the system components that you install and to ground your ESD wrist strap. This step minimizes the chance of electrostatic discharge when you handle ungrounded components before you install them.

Be sure that the rack includes AC power receptacles with the amperage required for the power supply units that you will be installing in the chassis. If you are installing 6-kW power supply units, you must have 20A circuits. If you are installing 7.5-kW power supply units, you must have 30A circuits.

**Warning**   **Take care when connecting units to the supply circuit so that wiring is not overloaded.** Statement 1018

For instructions on setting up the rack, see the documentation that the manufacturer shipped with the rack.

## Unpacking and Inspecting a New Chassis

Before you install a new Cisco Nexus 7018 chassis, you need to unpack and inspect it to be sure that you have all the items that you ordered and verify that the device was not damaged during shipment. If anything is damaged or missing, contact your customer representative immediately.

**Tip**    Do not discard the shipping container when you unpack the Cisco Nexus 7018 system. Flatten the shipping cartons and store them with the pallet used for the system. If you need to move or ship the system in the future, you will need these containers. For repacking instructions, see Appendix D, "Repacking the Cisco Nexus 7000 Series Device for Shipment."

To inspect the shipment, follow these steps:

**Step 1**    Compare the shipment to the equipment list provided by your customer service representative and verify that you have received all of the ordered items. The shipment should include boxes for the following:

- System chassis, which includes the following components:
    - 2 supervisor modules
    - 1 to 16 I/O modules
    - 3 to 5 fabric modules
    - 2 fan trays
- 2 to 4 power supply units

    The power supply units are shipped with the chassis but boxed separately.

- Cisco Nexus 7018 system accessory kit

    To see a list of what is in the accessory kit, see the *Cisco Nexus 7018 System Accessory Kit Contents* document, which is included in the kit.

- Front door (optional)

**Step 2**    Check the contents of each box or package for damage.

**Step 3**    If you notice any discrepancies or damage, send the following information to your customer service representative by e-mail:

- Invoice number of the shipper (see the packing slip)
- Model and serial number of the missing or damaged unit
- Description of the problem and how it affects the installation

# Installing the Bottom-Support Rails on the Rack

The bottom-support rails hold the Cisco Nexus 7018 chassis on the rack or cabinet. To maximize the stability of the rack, you must attach these rails at the lowest possible rack unit (RU).

The prerequisites, tools, and process for installing the bottom-support rails are included in the following topics:

- Prerequisites for Attaching the Bottom-Support Rails, page 3-4

- Required Tools and Equipment, page 3-4
- Attaching the Bottom-Support Rails, page 3-4

## Prerequisites for Attaching the Bottom-Support Rails

Before you can attach the bottom-support rails, you must fully install the rack or cabinet, and should, for maximum stability, bolt the rack or cabinet to the concrete subfloor. If anything lighter than the Cisco Nexus 7018 system is already installed in the rack, you should make sure that it is positioned above where you will be installing the Nexus 7000 Series system. Also, you must have the bottom-support rail kit, which ships with the Nexus 7000 Series accessory kit. The distance between the front and rear mounting brackets on the rack or cabinet must be between 24 and 32 inches (61.0 and 81.3 cm).

## Required Tools and Equipment

You need the following tools and equipment to attach the bottom-support rails:

- No. 1 Phillips screwdriver.
- Rack-mount kit (shipped with the accessory kit). Table 3-1 lists the items in the rack-mount kit.

*Table 3-1        Contents for the Rack-Mount Kit*

| Part Description | Quantity |
|---|---|
| 12-24 x 3/4 in. Phillips screws | 40 |
| M6 x 19 mm Phillips screws | 40 |
| Adjustable bottom-support rails | 2 |

## Attaching the Bottom-Support Rails

To maximize the stability of the rack, you should install the chassis as low as possible on the rack. Install the first system at the bottom of the rack. If you install a second system in the same rack, install it immediately above the lower system if there is enough vertical space. If you are planning to install another system in the rack, make sure that the heaviest system is installed first at the bottom of the rack.

**Warning**    **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- **This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**
- **When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**
- **If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.** Statement 1006

To attach the bottom-support rails to a four-post EIA rack, follow these steps:

**Step 1**    Position one of the two adjustable bottom-support rails at the lowest possible RU as shown in Figure 3-1. Adjust the length of the rail so that it stretches from the outer edges of the front and rear vertical mounting rails. You can expand the rail so that its mounting brackets are spaced between 24 to 32 inches (61.0 to 81.3 cm).

**Note**    Make sure that the two bottom-support rails are level with one another. If they are not level, adjust the higher rail down to the level of the lower rail.

*Figure 3-1        Positioning the Bottom-Support Rails*
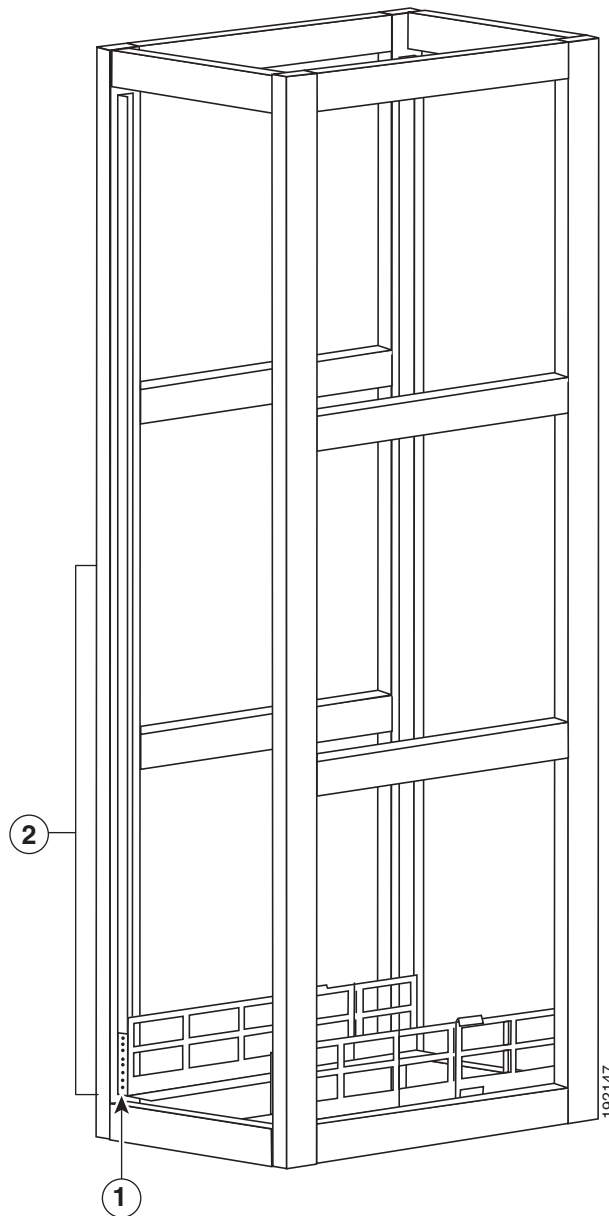
| 1 | For the first and heaviest chassis installed in a rack, position two bottom-support rails at the lowest RU on the rack. | 2 | Allow at least 43.75 inches (111.1 cm) (25 RU) for each Cisco Nexus 7018 system. |
|---|---|---|---|

**Step 2**   Use a Phillips screwdriver to screw in six M6 x 19 mm or 12-24 x 3/4 in. Phillips screws on each end of each rail (using a total of 24 screws for both brackets) as shown in Figure 3-2.

*Figure 3-2        Attaching a Bottom-Support Rail to a Rack*
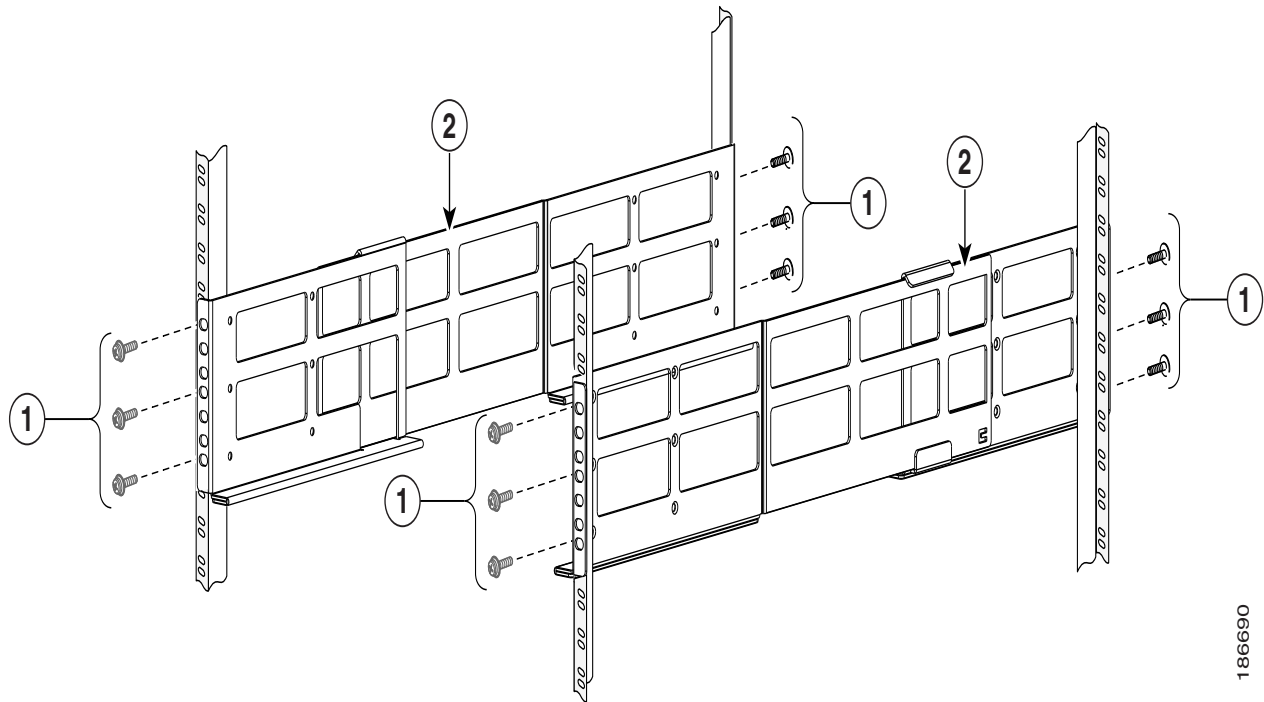


| 1 | Four sets of 6 M6 x 19 mm Phillips screws or four sets of 6 12-24 x 3/4 in. Phillips screws | 2 | Adjustable bottom-support rails (2) |
|---|---|---|---|

# Installing the Chassis

This section describes how to install the chassis (transporting and elevating the chassis to the rack using a mechanical lift, pushing it onto the rack, and then securing it to the rack).

This section includes the following topics:

# Prerequisites for Installing the Chassis

Before you install the chassis, you must make sure that the following items are available for the installation:

- Data center ground is accessible where you are installing the Cisco Nexus 7018 chassis
- Four-post, 19-inch, EIA rack or cabinet that includes such a rack

    For more information on the rack or cabinet, see the "Installing a Four-Post Rack or Cabinet" section on page 3-2.

⚠ **Warning** **Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.** Statement 1048

- Bottom-support rails installed in the rack or cabinet—You must already have two bottom-support rails attached to the lowest possible rack unit on the chassis.

    For more information, see the "Installing the Bottom-Support Rails on the Rack" section on page 3-3.

⚠ **Warning** **To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:**

- **This unit should be mounted at the bottom of the rack if it is the only unit in the rack.**
- **When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.**
- **If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.** Statement 1006

- Cisco Nexus 7018 chassis and its components are accounted for and undamaged

    For more information, see the "Unpacking and Inspecting a New Chassis" section on page 3-3.

# Required Tools and Equipment

You need the following tools and equipment to install the Nexus 7000 Series chassis:

- Mechanical lift capable of lifting at least 700 lbs (318 kg)
- No. 1 Phillips screwdriver

- Bottom-support rails kit (shipped with the Cisco Nexus 7018 accessory kit)

  Part of this kit has already been used to install the bottom-support rails. Table 3-2 lists the items in the rack-mount kit.

*Table 3-2        Contents for the Rack-Mount Kit*

| Part Description | Quantity |
| --- | --- |
| 12-24 x 3/4 in. Phillips screws | 40 |
| M6 x 19 mm Phillips screws | 40 |
| Adjustable bottom-support rails | 2 |

**Note** You should also have at least four people to push the chassis, which can weigh up to 700 lbs (318 kg), onto and off the mechanical lift and rack.

# Installing the Chassis

To install a Cisco Nexus 7018 chassis in a four-post rack or cabinet, follow these steps:

**Step 1** Load the chassis onto a mechanical lift as follows:

   **a.** Position the mechanical lift next to the shipping pallet that holds the chassis.

   **b.** Elevate the lift platform to the level of the bottom of the chassis (or no more than 1/4 inch [0.635 cm] below the bottom of the chassis).

   **c.** Use at least four persons to slide the chassis fully onto the lift so that the side of the chassis touches or is close to the vertical rails on the lift. Make sure that the front and rear of the chassis are unobstructed so you can easily push the chassis into the rack.

**Warning** **To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.** Statement 1032

**Caution** To lift the chassis, use a mechanical lift, not the handles on the side of the chassis. Use the side handles for only repositioning the chassis after it is already on the mechanical lift or in the rack or cabinet.

**Step 2** Use the mechanical lift to move and align the rear of the chassis to the front of the four-post rack or cabinet. Make sure that the bottom of the chassis is elevated to the height of the bottom-support rails or no more than 1/4 inch (0.635 cm) above the bracket.

**Step 3** Use at least four persons to push the chassis onto the installed bottom-support rails as shown in Figure 3-3.

Push the lower half of the front side of the chassis so that the back side enters the rack first, and push until the chassis mounting brackets come in contact with the front vertical mounting rails on the rack.

*Figure 3-3*        *Moving a Cisco Nexus 7018 Chassis onto a Rack*



| **1** | Push the lower half of the front side of the chassis | **2** | Chassis mounting brackets |
|---|---|---|---|
| **3** | Rack vertical mounting rails | | |

**Step 4**   Make sure that the screw holes in the chassis mounting brackets align with the screw holes in the vertical mounting rails.

If you need to reposition the chassis to align the screw holes, you can use the handles on the sides of the chassis.

**Tip**   To adjust the placement of the chassis so that the screw holes in the chassis mounting brackets align with the screw holes in the vertical mounting rails, use the chassis handles shown in Figure 3-4.

**Step 5**   Use a Phillips screwdriver to screw in eight M6 x 19-mm or 12-24 x 3/4-inch screws in each of the two chassis mounting brackets (use a total of 16 screws for two mounting brackets) as shown in Figure 3-4.

*Figure 3-4        Attaching the Cisco Nexus 7018 Chassis to the Rack*
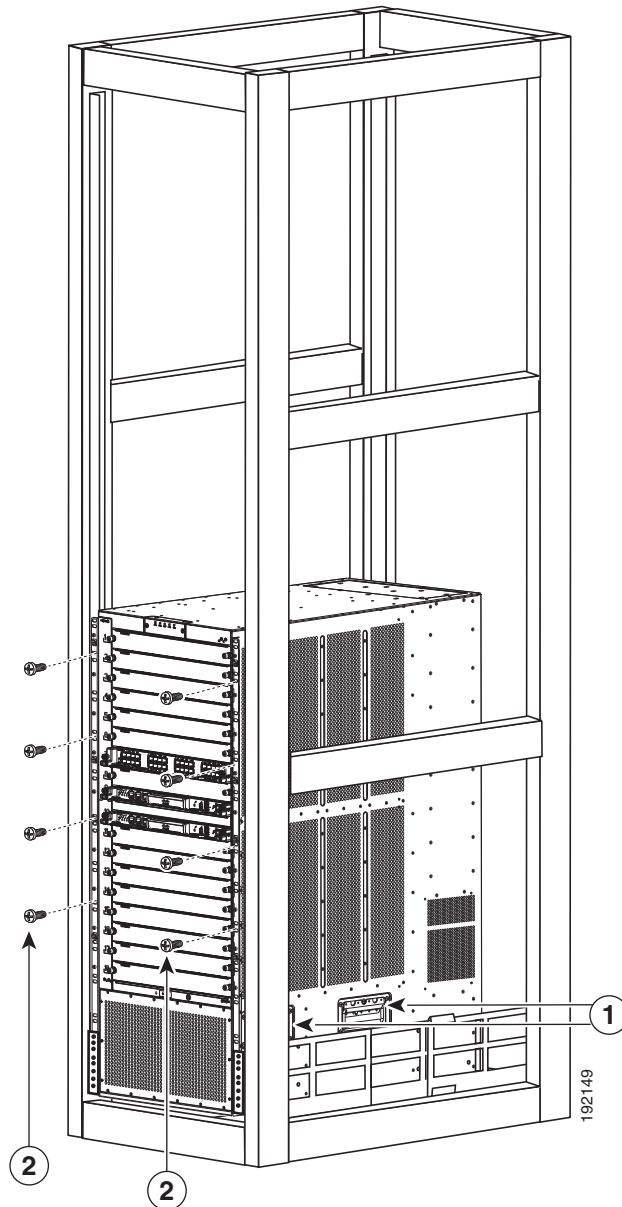


| 1 | Handles used to adjust the chassis placement. | 2 | Eight M6 x 19 mm or 10-24 x 3/4 in. Phillips screws used to attach each side bracket to a front mounting rail (use a total of 10 screws) |
|---|---|---|---|

# Grounding the Cisco Nexus 7018 Chassis

The Cisco Nexus 7018 system is grounded through the AC power supply cables and one of two grounding connections on the chassis. The AC power supply cables provide a connection to an earth ground whenever you connect the AC power to the system. The system ground, also referred to as the network equipment building system (NEBS) ground, provides additional grounding for EMI shielding requirements and for the low-voltage supplies (DC-DC converters) on the modules. This grounding system is active even when the AC power cables are not connected to the system. You establish this ground by connecting one of the two grounding pads on the chassis to the rack (if it is connected to an earth ground) or directly to the earth ground for the data center building.

This section includes the following topics:

## Prerequisites for Grounding the Chassis

Before you can ground the chassis, you must have a connection to the earth ground for the data center building. If you installed the Cisco Nexus 7018 chassis into a bonded rack (see the rack manufacturer's instructions for more information) that now has a connection to the data center earth ground, you can ground the chassis by connecting its ground ports to the rack. Otherwise, you must connect the chassis grounding ports directly to the data center ground.

## Required Tools and Equipment

To connect the system ground, you need the following tools and materials:

- Grounding lug—A two-holed standard barrel lug that supports up to 6 AWG wire. This lug is supplied with the Cisco Nexus 7018 system accessory kit.
- Grounding screws—Two M4 x 8 mm (metric) pan-head screws. These screws are shipped with the Cisco Nexus 7018 system accessory kit.
- Grounding wire—Not supplied with the Cisco Nexus 7018 system accessory kit. This wire should be sized to meet local and national installation requirements. Depending on the power supply and system, a 12 AWG to 6 AWG copper conductor is required for U.S. installations. We recommend that you use commercially available 6 AWG wire. The length of the grounding wire depends on the proximity of the switch to proper grounding facilities.
- No. 1 Phillips screwdriver.
- Crimping tool to crimp the grounding wire to the grounding lug.
- Wire-stripping tool to remove the insulation from the grounding wire.

# Connecting the System Ground

After you have moved the chassis into the rack or cabinet, you are ready to connect the system to the earth ground. After you ground the chassis, you can ground your ESD wrist strap by connecting it to the chassis.

To connect the system ground to the earth ground, follow these steps:

**Step 1** Use a wire-stripping tool to remove approximately 0.75 inch (19 mm) of the covering from the end of the grounding wire.

**Step 2** Insert the stripped end of the grounding wire into the open end of the grounding lug as shown in Figure 3-5.

*Figure 3-5        Inserting the Grounding Wire in the Grounding Lug*



| 1 | NRTL listed 45-degree grounding lug | 2 | Grounding cable with 0.75 in. of insulation stripped from the end |
|---|---|---|---|

**Step 3** Use the crimping tool to crimp the lug to the grounding wire. Verify that the ground wire is securely attached to the ground lug by attempting to pull the wire out of the crimped lug.

**Step 4** Remove the adhesive label from one of the two system grounding pads, and secure the grounding wire lug to the grounding pad with two M4 screws. Figure 3-6 shows the location of the grounding pad on the front side of the chassis. Ensure that the grounding lug and the grounding wire do not interfere with other device hardware or rack equipment.

*Figure 3-6        Grounding Port on the Cisco Nexus 7018 Chassis*
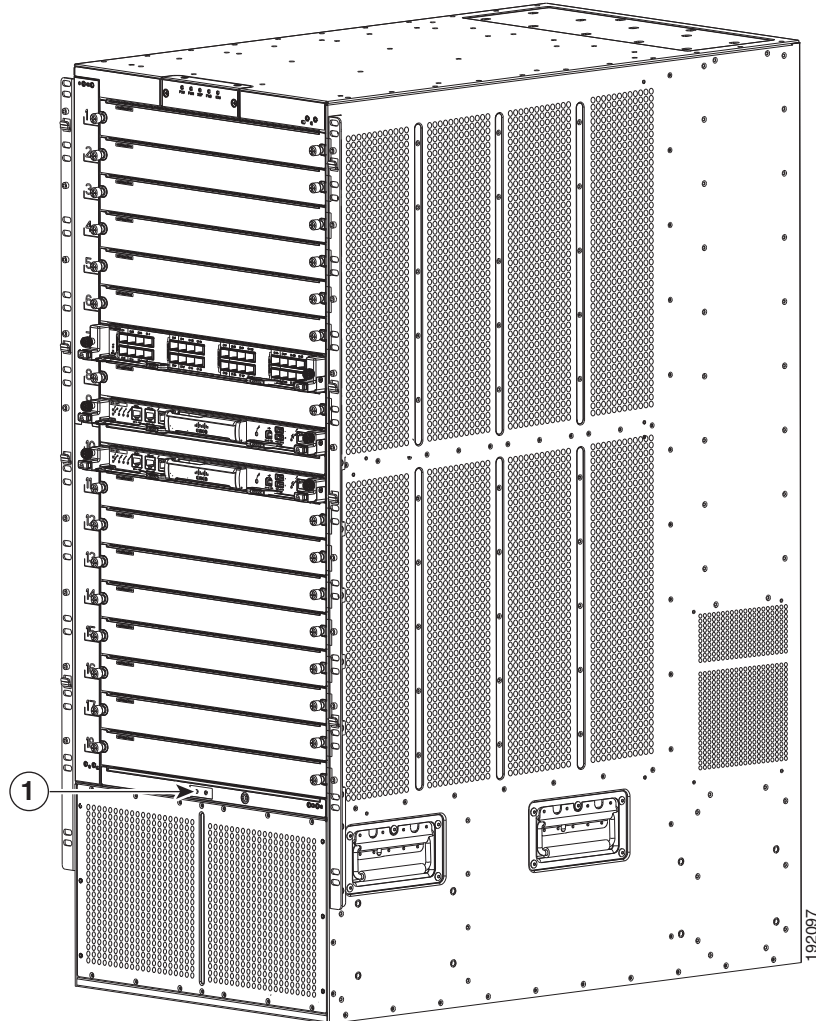


| 1 | Grounding port | | |
|---|---|---|---|

**Step 5**    Prepare the other end of the grounding wire and connect it to an appropriate grounding point in your site to ensure an adequate earth ground for the device. If the rack is grounded, connect the grounding wire as explained in the documentation provided by the vendor for the rack.

## Connecting Your ESD Strap to the Chassis

After you connect the chassis to the earth ground, you can ground your ESD strap by plugging it into the ESD port shown in Figure 3-7.

*Figure 3-7        ESD Grounding Ports on the Front of the Cisco Nexus 7018 Chassis*
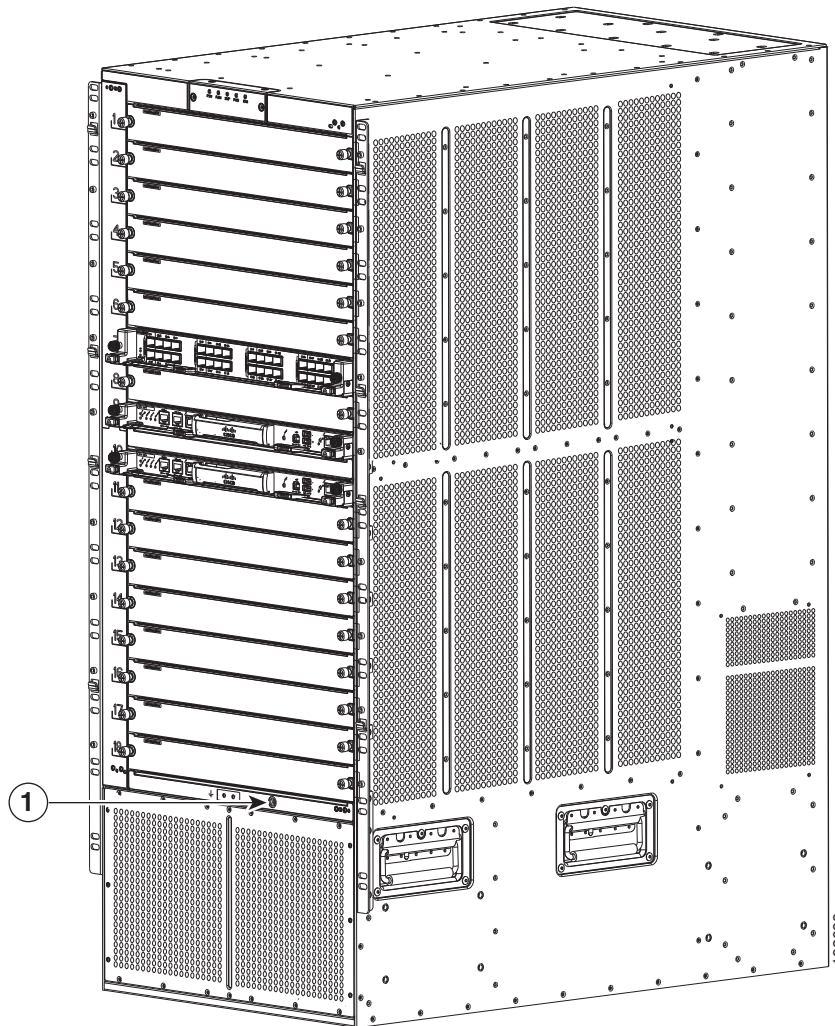


| 1 | ESD port | | |
|---|----------|---|---|

# Installing the Cable Management Assemblies

After you have fully installed the Cisco Nexus 7018 device chassis in the rack or cabinet (see the "Installing the Chassis" section on page 3-6), you can install the cable management assemblies on the front of the chassis.

To install the cable management assemblies on the Cisco Nexus 7018 device chassis, follow these steps:

**Step 1**    Attach a lower cable management assembly (800-31343-01) onto the two hooks that protrude from the lower half of the left rack-mount bracket that is attached to the Cisco Nexus 7018 device chassis, and loosely fasten the assembly to the chassis with four flat-head M4x10 screws as shown in Figure 3-8.

*Figure 3-8*    *Attaching the Lower Left Cable Management Assembly to the Left Rack-Mount Bracket*



| **1** | Lower cable management assembly | **2** | Left rack-mount bracket |
|---|---|---|---|
| **3** | Position the assembly so that the two lower hooks on the rack-mount bracket fit inside the two holes on the assembly, and then slide the assembly down so that it is held by the hooks. | **4** | Loosely fasten the assembly to the rack-mount bracket with four M4x10 screws. Do not tighten these screws. |

**Step 2**    Attach an upper cable management assembly (800-31342-01) onto the two hooks that protrude from the upper half of the left rack-mount bracket that is attached to the Cisco Nexus 7018 device chassis, and loosely fasten the assembly to the chassis with four flat-head M4x10 screws as shown in Figure 3-9.

*Figure 3-9*        *Attaching the Upper Left Cable Management Assembly to the Left Rack-Mount Brackets*



| 1 | Upper cable management assembly | 2 | Left rack-mount bracket |
|---|---|---|---|
| 3 | Position the assembly so that the two upper hooks on the rack-mount bracket fit inside the two holes on the assembly, and then slide the assembly down so that it is held by the hooks. | 4 | Loosely fasten the assembly to the rack-mount bracket with four M4x10 screws. Do not tighten these screws. |

**Step 3**    Repeat Step 1 and Step 2 to loosely attach a lower cable management assembly and an upper cable management assembly to the right rack-mount bracket. When completed, the chassis will appear as shown in Figure 3-10.

*Figure 3-10    Attaching the Upper Cable Management Assemblies to the Rack-Mount Brackets*
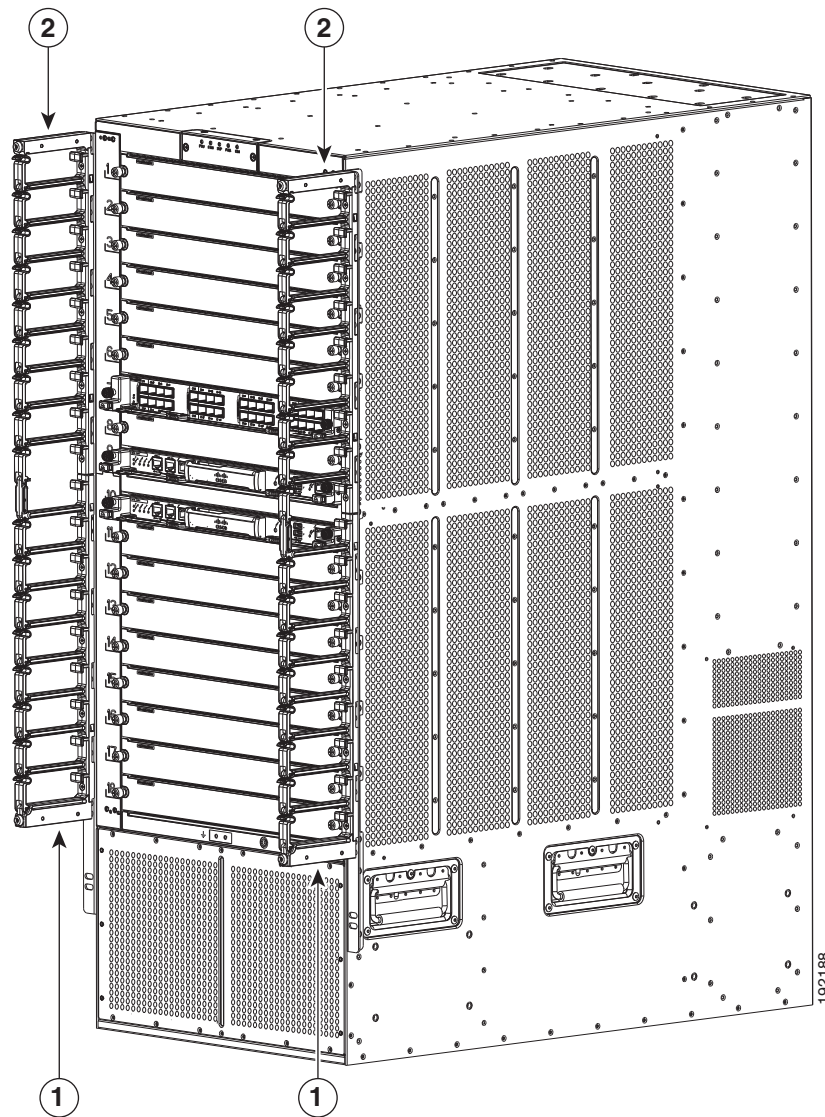


| **1** | Lower cable management assembly | **2** | Upper cable management assembly |
|---|---|---|---|

**Step 4**   Place the top hood (800-31269-01) on top of the two upper cable management assemblies that are already attached to the rack-mount brackets. Make sure that the side closest to the chassis has two alignment pins that align with the alignment holes in the chassis as shown in Figure 3-11. Push the top piece so that its alignment pins enter the alignment holes and the top hood rests against the chassis.

*Figure 3-11*  *Positioning the Top Hood with the Upper Cable Management Assemblies and the Device Chassis*
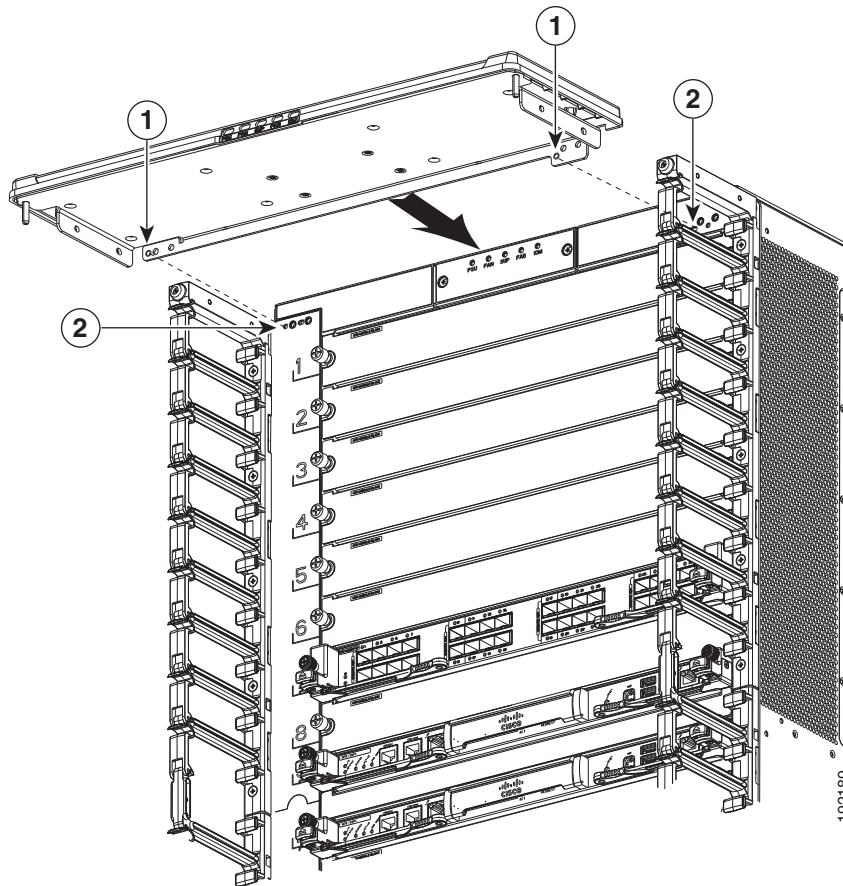


| 1 | Alignment pins | 2 | Alignment holes |
|---|----------------|---|-----------------|

**Step 5**    Use four M4x8 pan-head screws to loosely fasten the hood to the chassis as shown in Figure 3-11.

*Figure 3-12       Fastening the Top Hood to the Chassis and Cable Management Assemblies*



| 1 | Four M4x8 pan-head screws that fasten the hood to the chassis. | 2 | Four M4x8 pan-head screws that fasten the hood to the left and right cable management assemblies. |
|---|---|---|---|

**Step 6**    Use four M4x8 pan-head screws to loosely fasten the hood to each of the two side cable management assemblies as shown in Figure 3-11.

**Step 7**    Tighten each of the four screws that fasten the hood to the chassis to 95 to 130 N m (11 to 15 in-lbs).

**Step 8**    Tighten each of the four screws that fasten the hood to the cable management assemblies to 95 to 130 N m (11 to 15 in-lbs).

**Step 9**    Tighten each of the 18 screws that fasten the upper and lower cable management assemblies to the rack-mount brackets to 95 to 130 N m (11 to 15 in-lbs).

# Installing the Front Door and Air Intake Frame

If you need to install the optional double-hinged door and air intake frame, you must install them after installing the cable management assemblies on the chassis.

**Note**    For the double-hinged door to easily open or close in either direction, make sure that the chassis is level. If necessary, remove the chassis from the rack and adjust the bottom-support rails so that the chassis is level. Also, make sure that the cable management assemblies are aligned to the vertical sides of the chassis and that the cable management hood is level when you install those components.

To install the front door and air intake frame to the Cisco Nexus 7018 cable management system, follow these steps:

**Step 1**   Position the left door stopper (700-27454-01) on the middle of the left cable management assembly and fasten it with two M3x10 pan-head screws as shown in Figure 3-13. Tighten these two screws to 5 to 7 in. lbs.

*Figure 3-13        Attaching the Left Door Stopper*
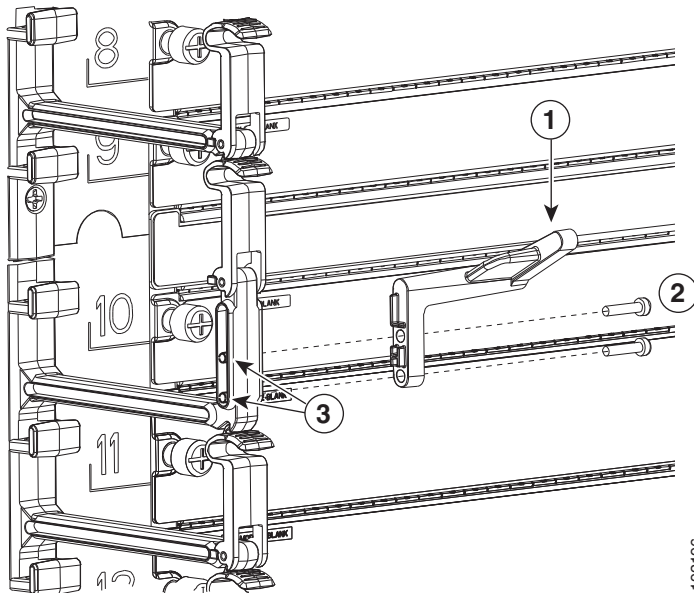


| 1 | Left door stopper identified with an L on the bottom of the base. | 2 | Two M3x10 screws that fasten the stopper to the cable management assembly. |
|---|---|---|---|
| 3 | Screw holes on the cable management assembly. | | |

**Step 2**   Position the right door stopper (700-27592-01) on the middle of the right cable management assembly and fasten it with two M3x10 pan-head screws as shown in Figure 3-14. Tighten these two screws to 5 to 7 in. lbs.

*Figure 3-14       Attaching the Right Door Stopper*
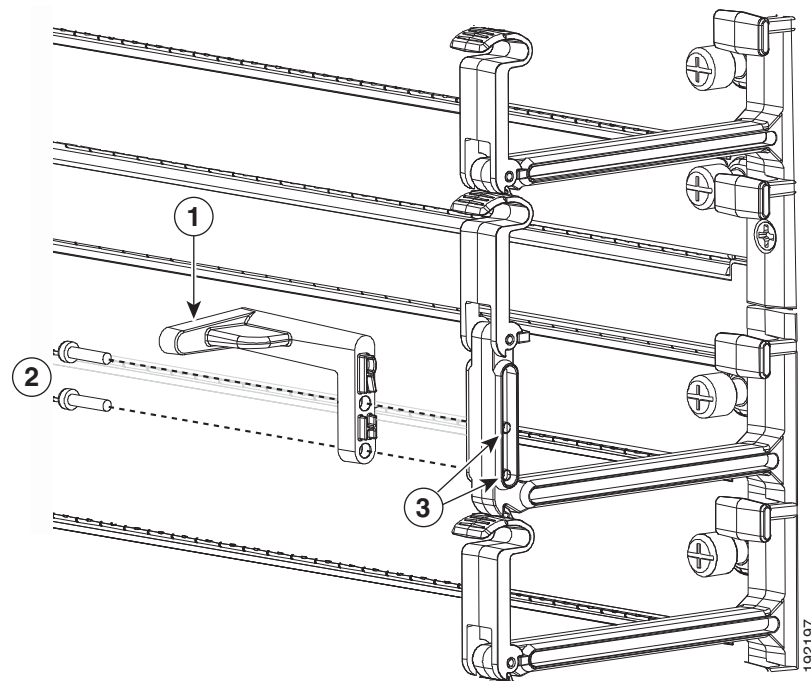


| **1** | Right door stopper identified with an R on the bottom of the base. | **2** | Two M3x10 screws that fasten the stopper to the cable management assembly. |
|---|---|---|---|
| **3** | Screw holes on the cable management assembly. | | |

**Step 3**    Position the hinge bracket (700-28491-01) at the bottoms of both cable management assemblies and the chassis as shown in Figure 3-15.

*Figure 3-15        Positioning the Hinge Bracket to the Cable Management Assemblies and Chassis*
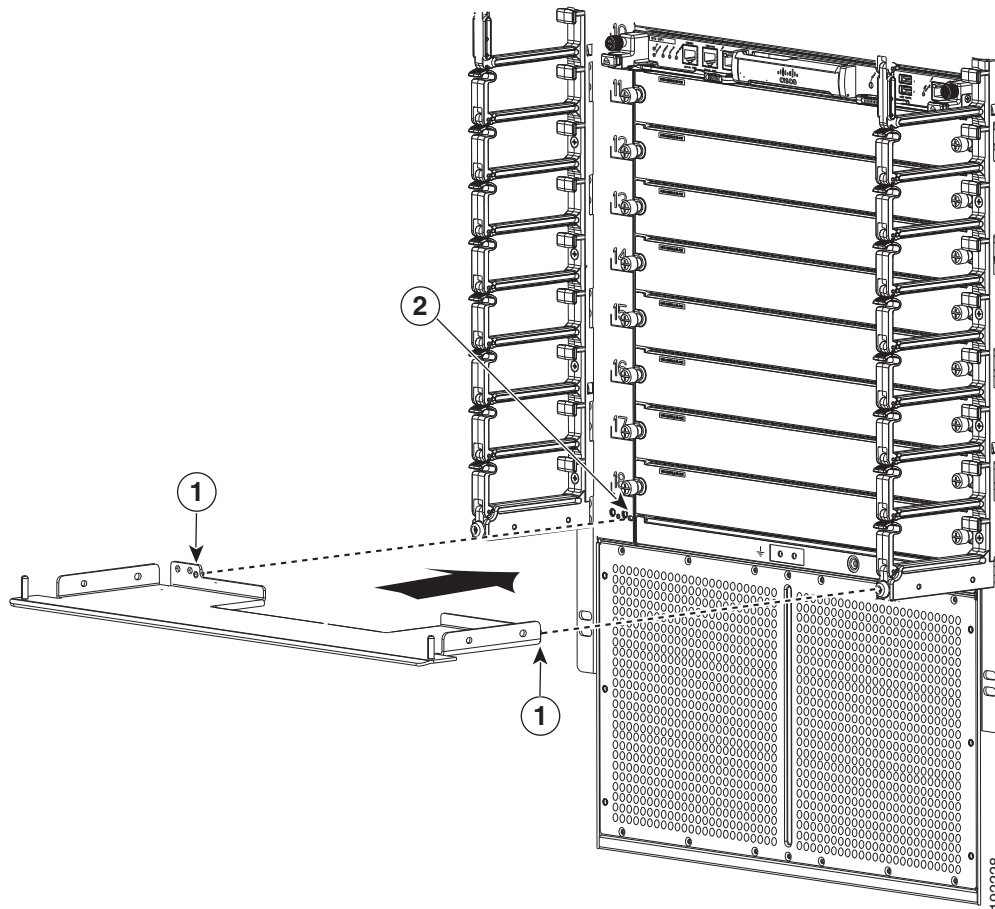


| **1** | Alignment pins | **2** | Alignment holes |
|-------|----------------|-------|-----------------|

**Step 4**    Attach the bracket to the chassis with eight loosely fastened M4x8 screws, as shown in Figure 3-16.

*Figure 3-16*        *Attaching the Hinge Bracket to the Cable Management Assemblies and Chassis*



| **1** | Four M4x8 pan-head screws that fasten the hood to the chassis. | **2** | Four M4x8 pan-head screws that fasten the hood to the left and right cable management assemblies. |
|---|---|---|---|

**Step 5**    Tighten the four M4x8 screws that fasten the hinge bracket to the chassis to 11 to 15 in. lbs.

**Step 6**    Tighten the four M4x8 screws that fasten the hinge bracket to the cable management assemblies to 11 to 15 in.lbs.

**Step 7**    Fasten the four ball-point studs (51-5008-01), each one with a washer (49-0430-01), to the bottom portion of the chassis, one stud by each corner of the air intake area as shown in Figure 3-17.

*Figure 3-17    Fastening Ball-Point Studs to the Air Intake Area*
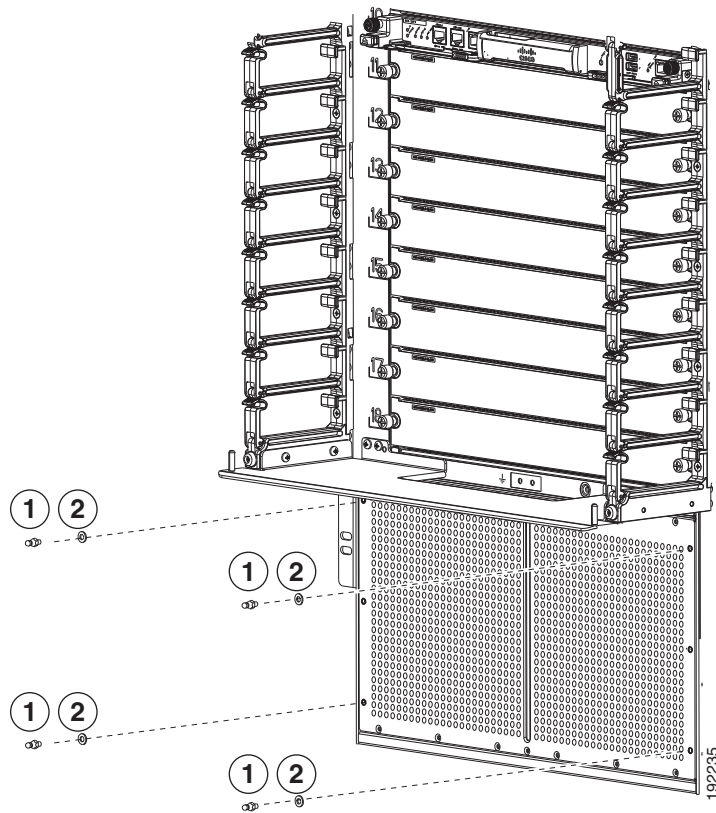


| 1 | Ball-headed stud | 2 | Washer |
|---|---|---|---|

**Step 8**    Align the air intake frame to the four ball-point studs and press the frame onto the chassis as shown in Figure 3-18. The captive screws on the air-intake frame should align with their screw holes in the chassis.

*Figure 3-18    Positioning the Air Intake Frame on the Chassis*
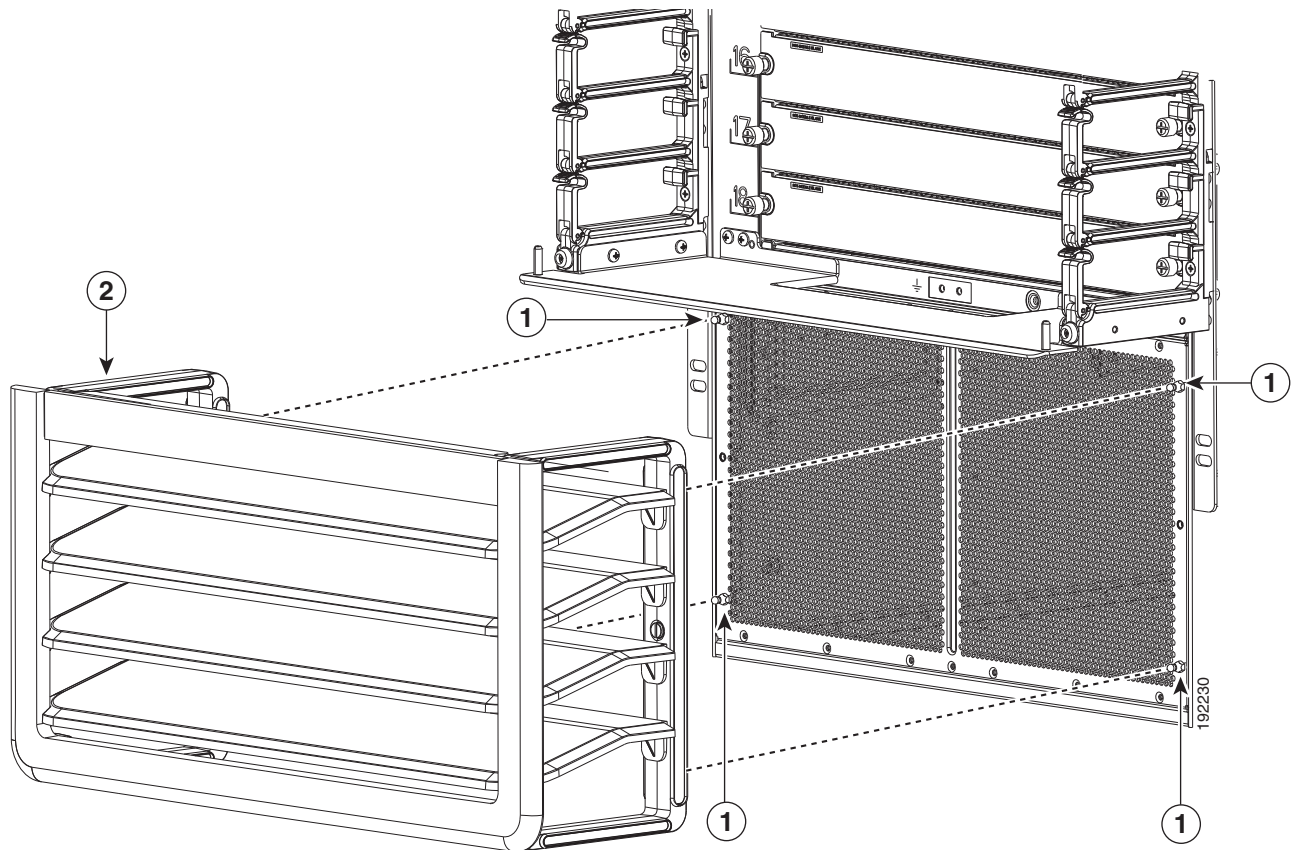


| **1** | Ball-headed studs | **2** | Air-intake frame with holes to be aligned with the ball-headed studs |
|---|---|---|---|

**Step 9** Fasten the captive screws on the air-intake frame to the chassis and tighten to 95 to 130 N m (11 to 15 in-lbs).

**Step 10** On the chassis door, pull the door handle open on one of the two sides of the door until the handle clicks (the handle clicks when you pull it about 30 degrees).

**Step 11** Move the side of the door with the opened handle onto the two hinge pins as shown in Figure 3-19. Make sure that the top and bottom hinge pins on the hood and hinge bracket fit through the slots on the top and bottom of that side of the door. Position the door so the hinge pins are located at the ends of the slots.

**Note** The double-hinge door can be installed and opened on either side. The figures in this procedure show how to install the door on the left side first, but you can use the instructions to install it on either side.

*Figure 3-19*       *Attaching One Side of the Door to the Chassis*
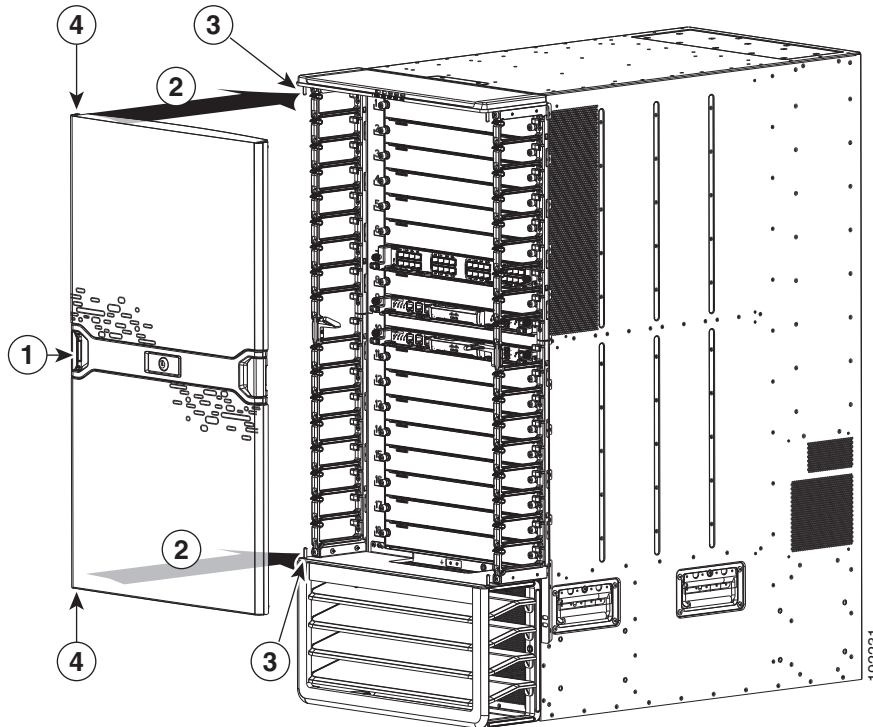


| 1 | Double-hinged door | 2 | Move one side to the hinge pins |
|---|---|---|---|
| 3 | Hinge pins | 4 | Slot for hinge pin |

**Step 12**    While holding the door on the hinge pins with one hand, use your other hand to press the locking button on the interior side of the door. See Figure 3-20. This action locks the latches around the hinge pins so that you no longer need to hold the door onto the chassis.

*Figure 3-20      Attaching the Left Side of the Door*
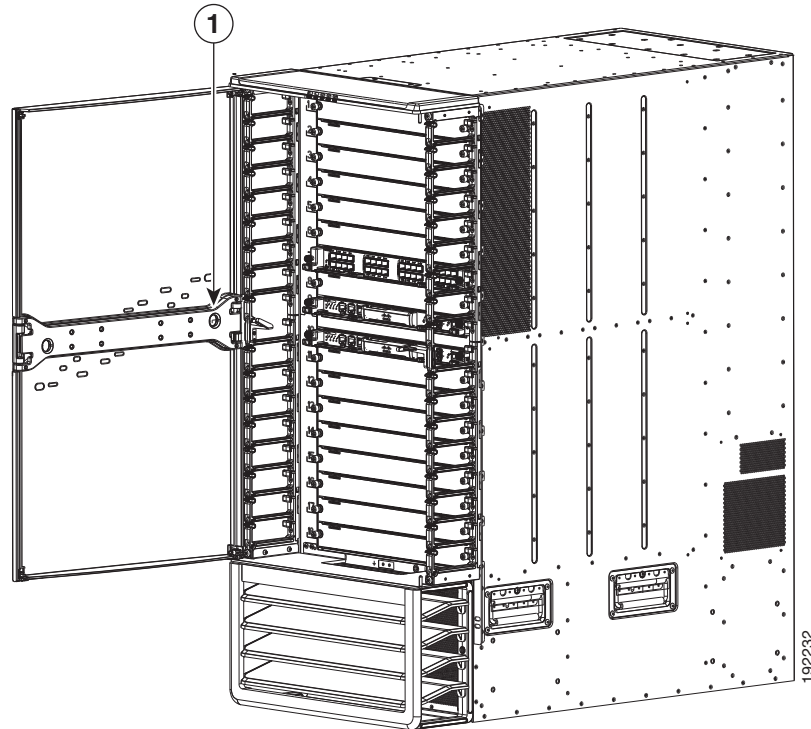


| 1 | Press the locking button to lock the door onto the hinge pins. | | |
|---|---|---|---|

> **Note** Be sure that the door is firmly latched to the two hinge pins. If both of the hinge pins are not secured behind the door latch, hold the door securely with one hand while opening the door handle for the unsecured side until the handle clicks, press that side of the door so that the pins are positioned all the way inside the door slots, press the door latch button on the interior side of the door, and then make sure that the door is firmly secured to both hinge pins.

**Step 13** Open the door handle on the open side of the door until it clicks. This action opens the latches on the open side of the door. See Figure 3-21.

*Figure 3-21    Attaching the Right Side of the Door*
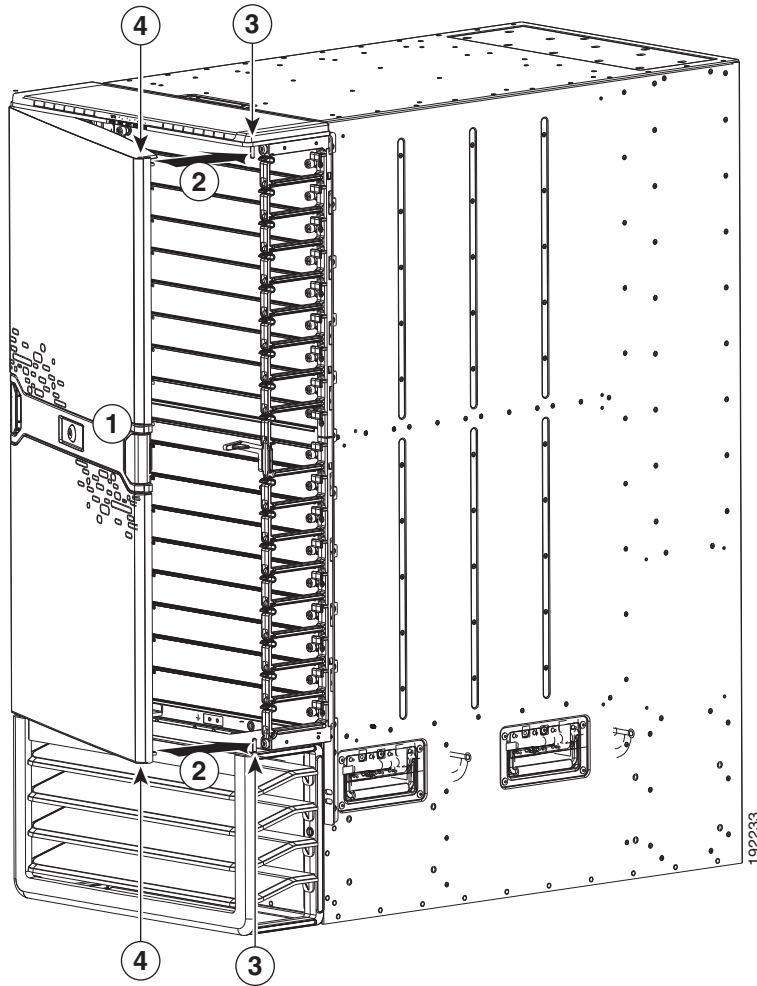


| **1** | Door handle pulled out until it clicks | **2** | Swing the door closed |
|---|---|---|---|
| **3** | Hinge pins | **4** | Slots for hinge pins |

**Step 14**  Swing the door closed so that the unused hinge pins fit inside the slots on the top and bottom of the door. When you close the door, the door stopper automatically presses the lock button on the inside of the door so that the door is locked on the hinge pins. If the door stopper does not close the latches, press the door closed at the handle until you hear the latches click. Make sure that the door is fully secured to the frames on both sides.

**Note**  If a hinge pin is not secured behind a door latch, open the door handle for that side of the door until it clicks, open that side of the door, and then press the door closed so that the pins are positioned all the way inside the door slots. When you close the door, the door stopper automatically closes the door latches. If you do not hear the latches click, press the door at the handle to fully close it and to activate the latches. Test the door to make sure that it is fully secured to the four hinge pins.

**Tip**    Whenever you need to open the door, pull one of the door handles open until it clicks and then swing that side of the door open.

**Note**    If the double-hinged door and its holders are not level, it is possible that you will have some difficulty opening or closing the door on one or both sides. The door is not defective. Either push in the bottom portion of the door or slightly lift up the door on that side just before closing. If the problem persists, open the door from the other side, which should be free of this problem, or adjust the cable management system and hinge bracket so that they are level.

# Installing and Formatting CompactFlash Cards

Each supervisor module on a Cisco Nexus 7018 system is shipped with a CompactFlash card installed in the LOG FLASH reader. The EXPANSION FLASH reader is left empty, but you can optionally install a card in that reader. For the card to function with the reader, you must make sure that it is either formatted for the reader before installing it or format it after installing it.

**Note**    The LOG FLASH and EXPANSION FLASH readers require different formats for their cards.

To replace an installed CompactFlash card, see the "Replacing a CompactFlash Card" section on page 8-15.

To install a CompactFlash card, follow these steps:

**Step 1**    Align the card with the slot for the CompactFlash reader slot that is labeled LOG FLASH or EXPANSION FLASH as shown in Figure 3-22. The grooves on the thin side of the card must begin on the end of the card that goes into the reader first.

*Figure 3-22    Aligning a CompactFlash Card to its Reader*



**Step 2**    Push the card all the way into the reader.

If the card does not fit easily into the reader, flip the card so the bottom edge is on top, and try pushing the card into the reader.

**Step 3**    Wait for the reader LED to turn green and for a message to appear on the console as follows:

- If you are installing a card into the log flash reader, the message will end with "logflash:online."

```
switch# 2008 Mar 15 08:00:00 switch %$ VDC-1 %$ %IDEHSD-2-MOUNT: logflash:online
```

- If you are installing a card into the expansion flash reader, the message will end with "slot0:online."

```
switch# 2008 Mar 15 08:00:00 switch %$ VDC-1 %$ %IDEHSD-2-MOUNT: slot0:online
```

- If you see an offline message or do not see a message, either the card is not fully pushed into the reader or it is improperly formatted.

```
switch# 2008 Dec 1 12:00:00 switch %$ VDC-1 %$ %IDEHSD-2-UMOUNT:logflash:offline
```

Make sure that the card is fully inserted inside the reader. If the card is fully inserted, either format the card (see the *Cisco NX-OS Fundamentals Configuration Guide, Release 4.0*) or replace the card with another card that is properly formatted for the reader (see the "Replacing a CompactFlash Card" section on page 8-15).

C H A P T E R **4**

# Installing Power Supply Units

This chapter describes how to install power supply units in any Cisco Nexus 7000 Series chassis. This chapter also explains how to connect the power supply to the AC power source. For information on managing power modes, see the "Power Supply Configuration Modes" section on page 6-8.

This chapter includes the following sections:

## Installing Power Supply Units

You can install two to three power supply units in the Cisco Nexus 7010 system and two to four power supply units in the Cisco Nexus 7018 system. In either system, you must fill each power supply bay with either a 6-kW or 7.5-kW power supply unit or cover the bay with a blank plate.

⚠

**Caution** Although each AC power interface on every power supply unit includes a ground connection, you should also connect the chassis to an earth ground. For information on grounding the Nexus 7010 chassis, see the "Grounding the Cisco Nexus 7010 Chassis" section on page 2-11. For information on grounding the Nexus 7018 chassis, see the "Grounding the Cisco Nexus 7018 Chassis" section on page 3-11.

After you install the chassis and connect the chassis to an earth ground, you can install the power supply units.

To install the power supply units, follow these steps for each 6-kW or 7.5-kW power supply unit:

**Step 1** Ensure that the switch on the front of the power supply unit is in the STBY position and that the power supply unit is not connected to AC power sources.

**Step 2** Grasp the handle on the power supply unit with one hand, place the other hand under the unit, and orient the unit to an open power supply bay on the rear of the chassis.

**Step 3** Slide the unit all the way into the power supply bay until it is seated on the midplane and the four captive screws on the front of the unit are aligned with their holes in the chassis.

**Step 4** Secure each of the four capture screws into the chassis and tighten them to 69 N m (8 in-lbs).

> **Note** If you do not have enough power supply units to fill all of the power supply bays, cover each empty power supply bay with a blank plate (Cisco part number 800-28658-01) and secure it by screwing in its captive screws to 69 N m (8 in-lbs).

# Connecting the Power Supply Units to AC Power

You must connect two or more installed 6-kW or 7.5-kW power supply units to an AC power source to power your Cisco Nexus 7000 Series system. To connect a 6-kW power supply unit, you must connect one or two power cables to the power supply and to one or two 20A AC power sources that provide 110 V or 220 V of power. To connect a 7.5-kW power supply unit, you must connect one or two power cables, which are permanently attached to the power supply unit, to 30A AC power sources that provide 220 V of power.

> **Note** The power cables required for each 6-kW power supply unit are shipped in the system accessory kit. Check the power cables with the list of available power cables in the *Cisco Nexus 7010 System Accessory Kit Contents* or *Cisco Nexus 7018 System Accessory Kit Contents* to be sure you have the correct cables. If you do not have the correct cables, contact Cisco Technical Support.

> **Warning** **Read the installation instructions before connecting the system to the power source.** Statement 1004

This section includes the following topics:

- Prerequisites for Connecting Power Supply Units to AC Power, page 4-2
- Required Tools and Equipment, page 4-2
- Connecting 6-kW Power Supply Units, page 4-3

## Prerequisites for Connecting Power Supply Units to AC Power

Before you connect the power supply units to AC power sources, you must install the power supply units in the chassis and you must have the appropriate AC power source receptacles within reach of the power supply cables that are attached to the installed power supply units. For 6-kW power supply units, you must have one or two 20 A circuits that provide 110 V or 220 V of power. For 7.5-kW power supply units, you must have one or two 30 A circuits that provide 220 V of power. If you are using the combined power mode or power supply redundancy mode, you only need one circuit. If you are using the input source redundancy mode, you must have at least two circuits.

## Required Tools and Equipment

You need a Phillips screwdriver to secure power cables to the power supply units.

# Connecting 6-kW Power Supply Units

To connect a 6-kW power supply unit to one or more AC power sources, follow these steps:

**Step 1** Ensure that the power supply switch located on the front of the power supply is set at STBY.

**Step 2** Plug one or two AC power cables into the power supply unit, and use a Phillips screwdriver to tighten the power cable retainer screws on the cable retention device.

**Step 3** Plug the other ends of the power cables into separate AC power sources supplied by the data center.

**Note** If you are using the combined power mode or power supply redundancy, you can connect both power cables to the same 20 A circuit. If you are using the input source redundancy mode, you must connect each power cable to separate 20 A circuits.

**Warning** **Take care when connecting units to the supply circuit so that wiring is not overloaded.** Statement 1018

**Warning** **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than:**
**250V, 20 A**
Statement 1005

**Step 4** Turn the power supply switch from STBY to ON.

**Step 5** Verify that the power supply is receiving AC power by making sure that the INPUT and OUTPUT power supply LEDs are lit and the FAULT LED is not lit or blinking. For an explanation of all the power supply unit LEDs and the conditions that they indicate, see Table C-5 on page C-5.

**Note** When you first activate the power supply, you can verify the functionality of the LEDs by checking that each LED turns on for a couple of seconds.

If the Fault LED is blinking red, turn the power switch to STDBY, check the AC power connections on the power supply unit and the AC power source, and then turn the power switch back to ON. The Input and Output LEDs for the connected power supply units should be green and the Fault LED should be off.

# Connecting 7.5-kW Power Supply Units

To connect a 7.5-kW power supply unit to one or more AC power sources, follow these steps:

**Step 1** Ensure that the power supply switch located on the front of the power supply is set at STBY.

**Step 2** Plug each power cable into separate AC power sources supplied by the data center.

**Note**   If you are using the combined power mode or power supply redundancy, you can connect both power cables to the same 30 A circuit. If you are using the input source redundancy mode, you must connect each power cable to separate 30 A circuits.

**Warning**   **Take care when connecting units to the supply circuit so that wiring is not overloaded.** Statement 1018

**Warning**   **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than:**
**250V, 20 A** Statement 1005

**Step 3**   Turn the power supply switch from STBY to ON.

**Step 4**   Verify that the power supply is receiving AC power by making sure that the INPUT and OUTPUT power supply LEDs are lit and the FAULT LED is not lit or blinking. For an explanation of all the power supply unit LEDs and the conditions that they indicate, see Table C-5 on page C-5.

**Note**   When you first activate the power supply, you can verify the functionality of the LEDs by checking that each LED turns on for a couple of seconds.

If the Fault LED is blinking red, turn the power switch to STDBY, check the AC power connections on the power supply unit and the AC power source, and then turn the power switch back to ON. The Input and Output LEDs for the connected power supply units should be green and the Fault LED should be off.

**C H A P T E R 5**

# Connecting the Cisco Nexus 7000 Device to the Network

This chapter describes how to connect the Cisco Nexus 7000 Series device (configure its IP address through a console, set up its management interface, and connect its Ethernet ports to the network) after it has been installed in its rack or cabinet.

This chapter includes the following sections:

## Preparing for Connections

When preparing your site for network connections to the Cisco Nexus 7000 Series device, consider the following for each type of interface:

- Cabling required for each interface type
- Distance limitations for each signal type
- Additional interface equipment needed

Before installing the device, have all additional external equipment and cables available.

## Required Tools and Equipment

- Console cable connector kit—You can find this kit in the accessory kit, which ships with the Cisco Nexus 7000 Series system.
- Network cabling—You have already routed the network cables to the location of the installed Nexus 7000 Series device.

- If you are creating a management connection to the supervisor module, you need to use a modular, RJ-45, UTP straight-through or crossover cable.

# Connecting to the Console

Before you create a network management connection for a Cisco Nexus 7000 Series device or connect the device to the network, you must create a local management connection through a console terminal and configure an IP address for the device.

You can also use the console to perform the following functions, each of which can be performed through the management interface after you make that connection later on:

- Configure the device using the command-line interface (CLI).
- Monitor network statistics and errors.
- Configure Simple Network Management Protocol (SNMP) agent parameters.
- Download software updates.

This local management connection is made between the asynchronous serial port on each Cisco Nexus 7000 Series supervisor module and a console device capable of asynchronous transmission, such as a computer terminal. On the supervisor modules, you use one of the following two asynchronous serial ports:

- CONSOLE SERIAL PORT

  This port is used for direct connections to the console.

- COM1/AUX SERIAL PORT

  This port is used for modem connections to the console.

> **Note** Before you can connect the console port to a computer terminal, make sure that the computer terminal supports VT100 terminal emulation. The terminal emulation software makes communication between the device and computer possible during setup and configuration.

To connect the Cisco Nexus 7000 Series device to a computer terminal, follow these steps for each supervisor module installed:

**Step 1** Configure the terminal to match the following default port characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity

**Step 2** Connect an RJ-45 rollover cable to one of the following serial ports on one of the supervisor modules on the Cisco Nexus 7000 Series device:

- CONSOLE SERIAL PORT—Use this port if you are not using a modem.
- COM1/AUX SERIAL PORT—Use this port if you are using a modem.

You can find this cable in the console cable connector kit, which is part of the accessory kit for the Cisco Nexus 7000 Series device .

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**Step 3**   Route the RJ-45 rollover cable through the center slot in the cable management system and then to the console or modem.

**Step 4**   Connect the other end of the RJ-45 rollover cable to the console or to a modem that can connect to the console. If the console or modem cannot use an RJ-45 connection, use one of the following adapters from the console cable connector kit:

- RJ-45/DSUB F/F adapter
- RJ-45/DSUB R/P adapter
- DB-9F/RJ-45F PC terminal

# Creating an Initial Device Configuration

After you create the local management connection with a console, you must assign an IP address to the device management interface so that you can then connect the device to the network.

As soon as you power up the device, it boots up and asks you a series of questions to configure the device. This section explains how to configure the IP address that is required to connect the device to the network. To enable you to connect the device to the network, you can use the default choices for each configuration except the IP address. You can perform the other configurations at a later time as described in the *Cisco NX-OS Fundamentals Configuration Guide, Release 4.0*.

Before you perform the initial device configuration, you must determine the IP address and netmask needed for the following interfaces:

- Management (Mgmt0) interface
- Connectivity management processor (CMP) for the supervisor module in chassis slot 6
- CMP for the supervisor module in chassis slot 5

✎
**Note**   You should also know the unique name needed to identify the device among the devices in the network.

To define the IP addresses required for an initial device configuration, follow these steps:

**Step 1**   Power up the device by turning the power switch from STBY (standby) to Power on each power supply installed in the device chassis.

The Input and Output LEDs on each power supply light up (green) when the power supply units are sending power to the device.

The software asks you to specify a password to use with the device.

**Step 2**   Enter a new password to use for this device.

The software checks the security strength of your password and rejects your password if it is not considered to be a strong password. To increase the security strength of your password, make sure that it adheres to the following guidelines:

- At least eight characters
- Minimizes or avoids the use of consecutive characters (such as "abcd")
- Minimizes or avoids repeating characters (such as "aaabbb")
- Does not contain recognizable words from the dictionary

- Does not contain proper names
- Contains both uppercase and lowercase characters
- Contains numbers as well as letters

Examples of strong passwords include the following:

- If2CoM18
- 2004AsdfLkj30
- Cb1955S21

Note      Clear text passwords cannot include the dollar sign ($) special character.

Tip      If a password is trivial (such as a short, easy-to-decipher password), the software will reject your password configuration. Be sure to configure a strong password as explained in this step. Passwords are case sensitive.

If you enter a strong password, the software asks you to confirm the password.

Step 3    Enter the same password again.

If you enter the same password, the software accepts the password and begins asking a series of configuration questions.

Step 4    Until you are asked for an IP address, you can enter the default configuration for each question.

Repeat this step for each question until you are asked for the Mgmt0 IPv4 address.

Step 5    Enter the IP address for the management interface.

The software asks for the Mgmt0 IPv4 netmask.

Step 6    Enter a network mask for the management interface.

The software asks if you need to edit the configuration.

Step 7    Enter **no**.

The software asks if you need to save the configuration.

Step 8    Enter **yes**.

You can now set up the management interface for each supervisor module on the Cisco Nexus 7000 Series device.

# Setting Up the Management Interface

The Cisco Nexus 7000 Series supervisor management port (MGMT ETH) provides out-of-band management, which enables you to use the CLI or the Data Center Network Manager (DCNM) interface to manage the device by its IP address. This port uses a 10/100/1000 Ethernet connection with an RJ-45 interface.

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⚠

**Caution**    To prevent an IP address conflict, do not connect the MGMT 10/100/1000 Ethernet port until the initial configuration is complete. For more information, see the "Creating an Initial Device Configuration" section on page 5-3.

To connect the supervisor modules to the network, follow these steps for each supervisor module:

**Step 1**    Connect a modular, RJ-45, UTP cable to the MGMT ETH port on the supervisor module.

**Step 2**    Route the cable through the central slot in the cable management system.

**Step 3**    Connect the other end of the cable to a 10/100/1000 Ethernet port on the network device.

# Connecting the Supervisor CMP Port

The CMP, which is included on the Cisco Nexus 7000 Series supervisor module, is a secondary, lightweight processor that provides a second network interface to the system for use even when the Control Processor (CP) is not reachable. You can access the CMP to perform operations, such as taking over the CP console, restarting the CP, or restarting a particular I/O module.

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**Caution**    To prevent an IP address conflict, do not connect the CMP MGMT 10/100/1000 Ethernet port to the network until the initial configuration is complete. For more information, see the "Connecting to the Console" section on page 5-2.

To connect the CMP to the network, follow these steps for each installed supervisor module:

**Step 1**    Connect a modular, RJ-45, UTP cable to the CMP MGMT ETH port on the supervisor module.

**Step 2**    Route the cable through the cable management system and to the networking device.

To configure the port, see the *Cisco Nexus 7000 Series Connectivity Management Processor Configuration Guide*.

# Connecting an I/O Module

After you set up an IP address for the device and create an out-of-band management connection for the device, you can connect the copper (1000Base-T) and fiber optic (SFP+) I/O modules to the network.

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**Note**    The 48-port 10/100/1000 Ethernet module has 1000Base-T ports, and the 32-port 10-Gigabit Ethernet module has SFP+ ports.

This section includes the following topics:

- Connecting or Disconnecting a 1000Base-T Port, page 5-6
- Connecting or Disconnecting an SFP or SFP+ Port, page 5-6

# Connecting or Disconnecting a 1000Base-T Port

This section includes the following topics:

## Connecting a 1000Base-T Port to the Network

You can connect a copper network interface cable with an RJ-45 connector to a port on a 48-port I/O module.

To connect a 1000Base-T Ethernet port to the network, follow these steps:

**Step 1**    Attach an ESD-preventative wrist strap and follow its instructions for use.

**Step 2**    Route the interface cable through the cable management slot for the I/O module with the port for this cable.

**Step 3**    Insert the RJ-45 connector on the interface cable into the appropriate port on the I/O module.

## Disconnecting a 1000Base-T Port From the Network

You can disconnect a copper network interface cable from a 48-port 10/100/1000 Ethernet module by unplugging its RJ-45 connector from its port on the module.

To disconnect a 1000Base-T Ethernet port from the network, follow these steps:

**Step 1**    Attach an ESD-preventative wrist strap and follow its instructions for use.

**Step 2**    Unplug the RJ-45 connector on the interface cable from the appropriate port on the Ethernet I/O module.

**Step 3**    (Optional) If you need to remove the cable from the device, pull it out of the cable management slot.

# Connecting or Disconnecting an SFP or SFP+ Port

Each SFP or SFP+ port requires a transceiver to connect two fiber-optic cables to the port. When installing fiber-optic cables for a port, you must install SFP transceivers for 1-Gbps optical ports or install SFP+ transceivers for 10-Gbps optical ports. When removing fiber-optic cables, you must remove the fiber-optic cables from a transceiver before removing the transceiver from the port.

This section includes the following topics:

## Installing a Transceiver

**Note**    Use only Cisco SFP+ transceivers on the Cisco Nexus 7000 Series 32-port 10-Gigabit Ethernet modules and use only Cisco SFP transceivers on the Cisco Nexus 7000 Series 48-port 1-Gigabit Ethernet modules. Each Cisco transceiver is encoded with model information that enables the device to verify that the transceiver meets the requirements for the device.

To install a transceiver, follow these steps:

**Step 1**    Attach an ESD-preventative wrist strap and follow its instructions for use.

**Step 2**    Remove the dust cover from the port cage.

**Step 3**    Remove the dust cover from the port end of the transceiver.

**Step 4**    Insert the transceiver into the port.

**Caution**    If the transceiver does not install easily, ensure that it is correctly oriented and the clasp is in the correct position before continuing.

**Note**    If you cannot install the cable into the transceiver, insert or leave the dust plug in the cable end of the transceiver.

## Removing a Transceiver

**Caution**    Removing and installing a transceiver can shorten its useful life. Do not remove and insert transceivers more often than is absolutely necessary. We recommend that you disconnect cables before installing or removing transceivers to prevent damage to the cable or transceiver.

To remove a transceiver, follow these steps:

**Step 1**    Attach an ESD-preventative wrist strap and follow its instructions for use.

**Step 2**    If a cable is installed in the transceiver, remove the cable as explained in the "Disconnecting a Fiber-Optic Cable From a Transceiver" section on page 5-8.

**Step 3**    Remove the transceiver from the port by opening the clasp on the front of the transceiver and pulling the transceiver out of the port.

**Step 4**    Insert a dust cover into the port end of the transceiver and place the transceiver on an antistatic mat or into a static shielding bag if you plan to return it to your Cisco representative.

**Step 5**    If another transceiver is not being installed, protect the optical cage by inserting a clean cover.

## Connecting a Fiber-Optic Cable with a Transceiver

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**Caution**    To prevent damage to the fiber-optic cables, do not place more tension on them than the rated limit and do not bend them to a radius less than 1 inch if there is no tension in the cable or 2 inches if there is tension in the cable.

To prevent possible damage to the cable or transceiver, install the transceiver in the port before installing the cable in the transceiver.

To install a cable into a transceiver, follow these steps:

**Step 1**    Attach an ESD-preventative wrist strap and follow its instructions for use.

**Step 2**    Remove the dust cover from the port connector on the cable.

**Step 3**    Remove the dust cover from the cable end of the transceiver.

**Step 4**    Align the cable connector with the transceiver and insert the connector into the transceiver until it clicks into place (see Figure 5-1).

If the cable does not install easily, ensure that it is correctly oriented before continuing.

*Figure 5-1        Connecting the LC-Type Cable to a Ethernet Port*
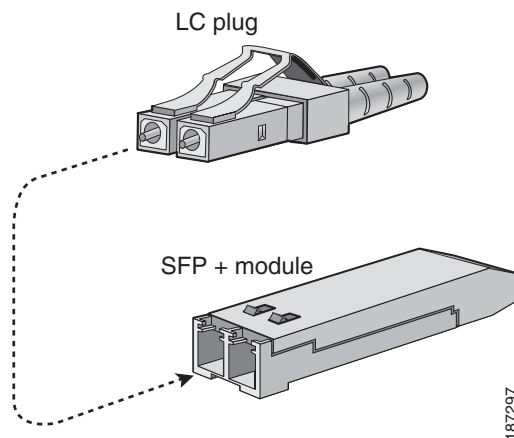


## Disconnecting a Fiber-Optic Cable From a Transceiver

⚠

**Caution**    When disconnecting fiber-optic cables, be sure to cover any exposed fiber-optic openings with dust plugs.

To remove the cable, follow these steps:

**Step 1**    Attach an ESD-preventative wrist strap and follow its instructions for use.

**Step 2**    Record the cable and port connections for later reference.

**Step 3** Press the release latch on the cable, grasp the connector near the connection point, and gently pull the connector from the transceiver.

> ✎
>
> **Note** If the cable does not remove easily, ensure that any latch present on the cable has been released before continuing.

**Step 4** Insert a dust plug into the cable end of the transceiver.

**Step 5** Insert a dust plug into the end of the cable.

## Maintaining Transceivers and Fiber-Optic Cables

Transceivers and fiber-optic cables must be kept clean and dust free to maintain high signal accuracy and prevent damage to the connectors. Attenuation (loss of light) is increased by contamination and should be below 0.35 dB.

Consider the following maintenance guidelines:

- Transceivers are static sensitive. To prevent ESD damage, wear an ESD-preventative wrist strap that is connected to the grounded chassis.

- Do not remove and insert a transceiver more often than is necessary. Repeated removals and insertions can shorten its useful life.

- Keep all optical connections covered when not in use. Clean them before using to prevent dust from scratching the fiber-optic cable ends.

- Do not touch the ends of connectors. Touching the ends can leave fingerprints and cause other contamination.

- Clean the connectors regularly; the required frequency of cleaning depends upon the environment. In addition, clean connectors if they are exposed to dust or accidentally touched. Both wet and dry cleaning techniques can be effective; refer to your site's fiber-optic connection cleaning procedures.

- Inspect routinely for dust and damage. If you suspect damage, clean and then inspect fiber ends under a microscope to determine if damage has occurred.

**C H A P T E R 6**

# Managing the Device Hardware

This chapter describes how to manage the device hardware, which includes the fabric and I/O modules, and it provides information on how to monitor system and module states. This chapter includes the following sections:

## Displaying the Device Hardware Inventory

You can display information about the field replaceable units (FRUs), including product IDs, serial numbers, and version IDs by entering the **show inventory** command. See Example 6-1.

***Example 6-1    Displaying the Hardware Inventory***

```
switch# show inventory
NAME: "Chassis",  DESCR: "Nexus7000 C7010 (10 Slot) Chassis "
PID: N7K-C7010          , VID: V01 ,  SN: TBM11493268

NAME: "Slot 1",  DESCR: "10 Gbps Ethernet Module"
PID: N7K-M132XP-12      , VID: V01 ,  SN: JAB1152010E

NAME: "Slot 2",  DESCR: "10 Gbps Ethernet Module"
PID: N7K-M132XP-12      , VID: V01 ,  SN: JAB120101QA

NAME: "Slot 5",  DESCR: "Supervisor module-1X"
PID: N7K-SUP1           , VID:     ,  SN: JAB115200YJ

NAME: "Slot 11",  DESCR: "Fabric card module"
PID: N7K-C7010-FAB-1    , VID:     ,  SN: JAB1152012J

NAME: "Slot 12",  DESCR: "Fabric card module"
PID: N7K-C7010-FAB-1    , VID:     ,  SN: JAB114800U5

NAME: "Slot 33",  DESCR: "Nexus7000 C7010 (10 Slot) Chassis Power Supply"
PID: N7K-AC-6.0KW       , VID: V01 ,  SN: DTH1205T002

NAME: "Slot 34",  DESCR: "Nexus7000 C7010 (10 Slot) Chassis Power Supply"
PID: N7K-AC-6.0KW       , VID: V01 ,  SN: DTH1205T006

NAME: "Slot 36",  DESCR: "Nexus7000 C7010 (10 Slot) Chassis Fan Module"
PID: N7K-C7010-FAN-S    , VID: V01 ,  SN: NWG114906HP

NAME: "Slot 37",  DESCR: "Nexus7000 C7010 (10 Slot) Chassis Fan Module"
PID: N7K-C7010-FAN-S    , VID: V01 ,  SN: NWG114906G9

NAME: "Slot 38",  DESCR: "Nexus7000 C7010 (10 Slot) Chassis Fan Module"
PID: N7K-C7010-FAN-F    , VID: V01 ,  SN: NWG114906N8

NAME: "Slot 39",  DESCR: "Nexus7000 C7010 (10 Slot) Chassis Fan Module"
PID: N7K-C7010-FAN-F    , VID: V01 ,  SN: NWG114906MC
```

To display switch hardware inventory details, enter the **show hardware** command. See Example 6-2.

***Example 6-2    Displaying Hardware Information***

```
switch# show hardware
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2008, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
other third parties and are used and distributed under license.
Some parts of this software are covered under the GNU Public
License. A copy of the license is available at
http://www.gnu.org/licenses/gpl.html.

Software
  BIOS:      version 3.11.0
  loader:    version N/A
  kickstart: version 4.0(1) [build 4.0(0.855)] [gdb]
  system:    version 4.0(1) [build 4.0(0.855)] [gdb]
  BIOS compile time:      10/15/07
  kickstart image file is: bootflash:/ks855.S7
  kickstart compile time:  10/12/2020 25:00:00 [02/02/2008 01:38:41]
  system image file is:    bootflash:/is855.S7
  system compile time:     1/27/2008 14:00:00 [02/02/2008 02:21:24]
```

```
Hardware
  cisco Nexus7000 C7010 (10 Slot) Chassis ("Supervisor module-1X")
  Intel(R) Xeon(R) CPU        with 4136544 kB of memory.
  Processor Board ID JAB115200YJ

  bootflash:    2030616 kB
  slot0:             0 kB (expansion flash)

switch  Kernel uptime is 1 day(s), 3 hour(s), 17 minute(s), 12 second(s)

Last reset
  Reason: Unknown
  System version: 4.0(0.855)
  Service:

plugin
  Core Plugin, Ethernet Plugin

CMP
  Is not online
--------------------------------
Switch hardware ID information
--------------------------------

Switch is booted up
  Switch type is : Nexus7000 C7010 (10 Slot) Chassis
  Model number is N7K-C7010
  H/W version is 0.406
  Part Number is 73-10900-04
  Part Revision is 06
  Manufacture Date is Year 11 Week 49
  Serial number is TBM11493268
  CLEI code is 0


--------------------------------
Chassis has 10 Module slots and 5 Fabric slots
--------------------------------

Module1  ok
  Module type is : 10 Gbps Ethernet Module
  2 submodules are present
  Model number is N7K-M132XP-12
  H/W version is 0.601
  Part Number is 73-10899-06
  Part Revision is 13
  Manufacture Date is Year 11 Week 52
  Serial number is JAB1152010E
  CLEI code is 0

Module2  ok
  Module type is : 10 Gbps Ethernet Module
  2 submodules are present
  Model number is N7K-M132XP-12
  H/W version is 0.601
  Part Number is 73-10899-06
  Part Revision is 13
  Manufacture Date is Year 12 Week 1
  Serial number is JAB120101QA
  CLEI code is 0

Module3  empty
```

```
        Module4  empty

        Module5  ok
          Module type is : Supervisor module-1X
          0 submodules are present
          Model number is N7K-SUP1
          H/W version is 0.901
          Part Number is 73-10877-09
          Part Revision is 10
          Manufacture Date is Year 11 Week 52
          Serial number is JAB115200YJ
          CLEI code is

        Module6  empty

        Module7  empty

        Module8  empty

        Module9  empty

        Module10  empty

        Xbar1  ok
          Module type is : Fabric card module
          0 submodules are present
          Model number is N7K-C7010-FAB-1
          H/W version is 0.405
          Part Number is 73-10624-04
          Part Revision is 14
          Manufacture Date is Year 11 Week 52
          Serial number is JAB1152012J
          CLEI code is

        Xbar2  ok
          Module type is : Fabric card module
          0 submodules are present
          Model number is N7K-C7010-FAB-1
          H/W version is 0.404
          Part Number is 73-10624-04
          Part Revision is 11
          Manufacture Date is Year 11 Week 48
          Serial number is JAB114800U5
          CLEI code is

        Xbar3  empty

        Xbar4  empty

        Xbar5  empty

        -------------------------------------
        Chassis has 3 PowerSupply Slots
        -------------------------------------

        PS1 ok
          Power supply type is: 6000.00W 220v AC
          Model number is N7K-AC-6.0KW
          H/W version is 1.0
          Part Number is 341-0230-02
          Part Revision is A0
          Manufacture Date is Year 12 Week 5
          Serial number is DTH1205T002
          CLEI code is IPUPADBAAA
```

```
PS2 ok
  Power supply type is: 6000.00W 220v AC
  Model number is N7K-AC-6.0KW
  H/W version is 1.0
  Part Number is 341-0230-02
  Part Revision is A0
  Manufacture Date is Year 12 Week 5
  Serial number is DTH1205T006
  CLEI code is IPUPADBAAA

PS3 absent

---------------------------------
Chassis has 4 Fan slots
---------------------------------

Fan1 ok
  Model number is N7K-C7010-FAN-S
  H/W version is 0.410
  Part Number is 73-10741-04
  Part Revision is 10
  Manufacture Date is Year 11 Week 49
  Serial number is NWG114906HP
  CLEI code is

Fan2 ok
  Model number is N7K-C7010-FAN-S
  H/W version is 0.410
  Part Number is 73-10741-04
  Part Revision is 10
  Manufacture Date is Year 11 Week 49
  Serial number is NWG114906G9
  CLEI code is

Fan3 ok
  Model number is N7K-C7010-FAN-F
  H/W version is 0.209
  Part Number is 73-10967-02
  Part Revision is 09
  Manufacture Date is Year 11 Week 49
  Serial number is NWG114906N8
  CLEI code is

Fan4 ok
  Model number is N7K-C7010-FAN-F
  H/W version is 0.209
  Part Number is 73-10967-02
  Part Revision is 09
  Manufacture Date is Year 11 Week 49
  Serial number is NWG114906MC
  CLEI code is

switch#
```

# Displaying the Device Serial Number

The serial number of your Cisco Nexus 7000 Series device can be obtained by looking at the serial number label on the back of the device (next to the power supply), or by entering the **show sprom backplane 1** command. See Example 6-3.

*Send document comments to nexus7k-docfeedback@cisco.com*

**Example 6-3    Displaying the Device Serial Number**

```
switch# show sprom backplane 1
DISPLAY backplane sprom contents:
Common block:
 Block Signature : 0xabab
 Block Version   : 3
 Block Length    : 160
 Block Checksum  : 0x13bd
 EEPROM Size     : 65535
 Block Count     : 5
 FRU Major Type  : 0x6001
 FRU Minor Type  : 0x0
 OEM String      : Cisco Systems, Inc.
 Product Number  : N7K-C7010
 Serial Number   : TBM11493268
 Part Number     : 73-10900-04
 Part Revision   : 06
 Mfg Deviation   : 0
 H/W Version     : 0.406
 Mfg Bits        : 0
 Engineer Use    : 0
 snmpOID         : 0.0.0.0.0.0.0.0
 Power Consump   : 0
 RMA Code        : 0-0-0-0
 CLEI Code       : 0
 VID             : V01
Chassis specific block:
 Block Signature : 0x6001
 Block Version   : 3
 Block Length    : 39
 Block Checksum  : 0x268
 Feature Bits    : 0x0
 HW Changes Bits : 0x0
 Stackmib OID    : 0
 MAC Addresses   : 00-1b-54-c2-1e-00
 Number of MACs  : 128
 OEM Enterprise  : 9
 OEM MIB Offset  : 5
 MAX Connector Power: 0
WWN software-module specific block:
 Block Signature : 0x6005
 Block Version   : 1
 Block Length    : 0
 Block Checksum  : 0x66
wwn usage bits:
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 00 00
```

```
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00 00 00 00 00 00 00
                00 00
          License software-module specific block:
           Block Signature : 0x6006
           Block Version   : 1
           Block Length    : 16
           Block Checksum   : 0x77
          lic usage bits:
           00 00 00 00 00 00 00 00
          Second Serial number specific block:
           Block Signature : 0x6007
           Block Version   : 1
           Block Length    : 28
           Block Checksum   : 0x312
           Serial Number   : TBM11476798
          switch#
```

# Displaying Power Usage Information

To display the actual power usage information for the entire device, use the **show environment power** command. See Example 6-4.

**Note**    In a Cisco Nexus 7000 Series device, power usage is reserved for both supervisor modules regardless of whether one or both supervisor modules are present.

*Example 6-4    Displaying Power Management Information*

```
switch# show environment power


Power Supply:
Voltage: 50 Volts
---------------------------------------------------
PS  Model               Power       Power     Status
                        (Watts)     (Amp)
---------------------------------------------------
1   N7K-AC-6.0KW        3000.00     60.00     Ok
2   N7K-AC-6.0KW        3000.00     60.00     Ok
3   N7K-AC-6.0KW           0.00      0.00     Shutdown


Mod Model               Power    Power      Power     Power      Status
                        Requested Requested Allocated Allocated
                        (Watts)  (Amp)      (Watts)   (Amp)
--- ------------------- -------  ---------- --------- ---------- ----------
1   N7K-M132XP-12        773.50   15.47      773.50    15.47      Powered-Up
```

```
2    N7K-M132XP-11        423.50   8.47    423.50   8.47      Powered-Up
5    N7K-SUP1             210.00   4.20    210.00   4.20      Powered-Up
6    N7K-SUP1             210.00   4.20    210.00   4.20      Powered-Up
Xb1  N7K-C7010-FAB-1       60.00   1.20     60.00   1.20      Powered-Up
Xb2  N7K-C7010-FAB-1       60.00   1.20     60.00   1.20      Powered-Up


Power Usage Summary:
--------------------
Power Supply redundancy mode:            PS-Redundant
Power Supply redundancy operational mode:   Non-Redundant

Total Power Capacity                     12000.00 W

Power reserved for Supervisor(s)           420.00 W
Power reserved for Fan Module(s)          2184.00 W
Power reserved for Fabric Module(s)        300.00 W
Power currently used by Modules           1197.00 W

                                         -------------
Total Power Available                     7899.00 W
                                         -------------
switch#
```

# Power Supply Configuration Modes

This section includes the following topics:

## Power Supply Configuration Overview

You can configure one of the following power modes to either use all of the available power provided by the installed power supply units or to provide power redundancy when there is a power loss:

- Combined mode—Provides the maximum amount of available power by utilizing the combined power output from all installed power supply units for device operations. This mode does not provide redundancy.

- Power-supply redundancy mode—Allows you to replace a power supply during device operations. All power supply units are active. The available power is calculated as the least amount of power available from all but one of the power supply units (N+1). The reserve power is the amount of power output by the power supply that can output the most power. For example, if three power supply units output 3 kW, 6 kW, and 6 kW, the available power is 9 kW (3 kW + 6 kW) and the reserve power is 6 kW.

- Input source redundancy mode—Takes power from two electrical grids so that if one grid goes down, the other grid can provide the power needed by the device. Each grid powers half of each power supply (grid A is connected to the Input 1 receptacle on each power supply and grid B is connected to the Input 2 receptacle on each power supply). The available power is the amount of power output by the portions of power supply units connected to the same grid. For example, if three power supply units are connected to a 110-V grid and a 220-V grid, each power supply outputs 1.2 kW for the 110-V grid and 3.0 kW for the 220-V grid. The available power would be 3.6 kW (1.2 kW + 1.2 kW + 1.2 kW) and the reserve power would be 9.0 kW (3.0 kW + 3.0 kW + 3.0 kW).

- Full redundancy mode—Provides both power-supply redundancy and input-source redundancy. This mode lets you replace a power supply without interrupting system operations or continue powering the device if one of two grids goes down. The available power is the lesser amount of output power for power supply redundancy or input source redundancy.

To determine the amount of available power for 6-kW power supply units in each power mode, see Table 6-1. To determine the amount of available power for 7.5-kW power supply units, see Table 6-2.

*Table 6-1        Power Availability for 6-kW Power Supply Units*

|  | Combined Mode | Power Supply Redundancy Mode | Input Source Redundancy Mode | Full Redundancy Mode |
|---|---|---|---|---|
| Dual inputs per power supply unit |  |  |  |  |
| 220-V and 220-V inputs |  |  |  |  |
| 1 power supply | 6000 W | — | 3000 W | — |
| 2 power supply units | 12,000 W | 6000 W | 6000 W | 6000 W |
| 3 power supply units | 18,000 W | 12,000 W | 9000 W | 9000 W |
| 220-V and 110-V inputs |  |  |  |  |
| 1 power supply | 4200 W | — | 1200 W | — |
| 2 power supply units | 8400 W | 4200 W | 2400 W | 2400 W |
| 3 power supply units | 12,600 W | 8400 W | 3600 W | 3600 W |
| 110-V and 110-V inputs |  |  |  |  |
| 1 power supply | 2400 W | — | 1200 W | — |
| 2 power supply units | 4800 W | 2400 W | 2400 W | 2400 W |
| 3 power supply units | 7200 W | 4800 W | 3600 W | 3600 W |
| Single inputs per power supply unit |  |  |  |  |
| 220-V input |  |  |  |  |
| 1 power supply | 3000 W | — | — | — |
| 2 power supply units | 6000 W | 3000 W | — | — |
| 3 power supply units | 9000 W | 6000 W | — | — |
| 110-V input |  |  |  |  |
| 1 power supply | 1200 W | — | — | — |
| 2 power supply units | 2400 W | 1200 W | — | — |
| 3 power supply units | 3600 W | 2400 W | — | — |

*Table 6-2          Power Availability for 7.5-kW Power Supply Units*

| | Combined Mode | Power Supply Redundancy Mode | Input Source Redundancy Mode | Full Redundancy Mode |
|---|---|---|---|---|
| Dual inputs per power supply unit | | | | |
| 220-V and 220-V inputs | | | | |
|     1 power supply unit | 7500 W | — | 3750 W | — |
|     2 power supply units | 15,000 W | 7500 W | 7500 W | 7500 W |
|     3 power supply units | 22,500 W | 15,000 W | 11,250 W | 11,250 W |
|     4 power supply units | 30,000 W | 22,500 W | 15,000 W | 15,000 W |
| Single input per power supply unit | | | | |
| 220-V input | | | | |
|     1 power supply unit | 3750 W | — | — | — |
|     2 power supply units | 7500 W | 3750 W | — | — |
|     3 power supply units | 11,250 W | 7500 W | — | — |
|     4 power supply units | 15,000 W | 11,250 W | — | — |

**SUMMARY STEPS**

1. **config t**
2. **power redundancy-mode** *mode*

**DETAILED STEPS**

To configure the power supply mode, follow these steps:

| | Command | Purpose |
|---|---|---|
| Step 1 | `config t`<br><br>Example:<br>`switch# config t`<br>`switch(config)#` | Enters configuration mode. |
| Step 2 | `power redundancy-mode`<br>`combined|ps-redundant|insrc-redundant|`<br>`redundant`<br><br>Example:<br>`switch(config)# power redundancy-mode`<br>`redundant`<br>`switch(config)#` | Configures one of the following power supply modes:<br>• For combined mode, use the **combined** keyword.<br>• For power supply redundancy, use the **ps-redundant** keyword.<br>• For input source redundancy, use the **insrc-redundant** keyword.<br>• For full redundancy, use the **redundant** keyword. |

> **Note** To display the current power supply configuration, use the **show environment power** command.

## Power Supply Configuration Guidelines

Follow these guidelines when configuring power supply units:

- When power supply units with different capacities are installed in the switch, the amount of available power differs based on one of the following configuration modes:

  - Combined mode—To activate this mode, use the **power redundancy-mode combined** command. If the combined power provided by all of the installed power supply units meets the power requirements of all of the device modules, then this mode is sufficient for running your device.

    For example, suppose your system has the following setup:

    Power supply unit 1 outputs 6 kW.
    The device power requirement is 8.784 kW.

    The following two scenarios explain what happens for different numbers of power supply units that you install:

    Scenario 1: If you do not add a power supply unit, the available power (6 kW) is insufficient for the device power requirement, so the device powers the supervisor modules, fabric modules, and fan trays, before powering as many I/O modules as the remaining available power can support (one or more I/O modules might not be powered).

    Scenario 2: If you install an additional power supply unit that can output 3 kW, the available power becomes 9.0 kW. The increased amount of available power exceeds the device power requirement, so all of the modules and fan trays in the device can power up.

    Table 6-3 shows the results for each scenario.

*Table 6-3        Combined Power Mode Scenarios*

| Scenario | Power Supply 1 (kW) | Power Supply 2 (kW) | System Usage (kW) | Available Power (kW) | Result |
|---|---|---|---|---|---|
| 1 | 6.0 | — | 8.784 | 6.0 | Available power is less than system usage, so you cannot power the entire system with this mode. |
| 2 | 6.0 | 3.0 | 8.784 | 9.0 | Available power exceeds the system usage, so you can use this mode to power your entire system. |

  - Power supply redundancy mode—To activate this power mode, use the **power redundancy-mode ps-redundant** command. The power supply unit that outputs the most power provides the reserve power, and the combined output for the other power supply units becomes the available power.

    For example, suppose your system has the following setup:

Power supply unit 1 outputs 3.0 kW.
Power supply unit 2 outputs 6.0 kW.
The device power requirement is 8.784 kW.

The following three scenarios explain what happens depending on what you install for the third power supply unit:

Scenario 1: If you do not add a third power supply unit, the reserve power is 6 kW and the available power is 3 kW. The available power is insufficient for the device power requirement, so you cannot power the entire device.

Scenario 2: If you add a power supply unit that outputs 3 kW, the reserve power remains 6 kW and available power becomes 6 kW. The available power is still insufficient because it does not meet the device power requirement, so you can power more modules than you could with Scenario 1, but you still cannot power the entire device.

Scenario 3: If you add a power supply unit that outputs 7.5 kW, the reserve power becomes 7.5 kW and the available power becomes 9 kW. The available power exceeds the device power requirement, so you can power up all of the modules and fan trays in the device.

Table 6-4 shows the results for each scenario.

*Table 6-4        Power Supply Redundancy Mode Scenarios*

| Scenario | Power Supply 1 (kW) | Power Supply 2 (kW) | Power Supply 3 (kW) | System Usage (kW) | Available Power (kW) | Reserve Power (kW) | Result |
|---|---|---|---|---|---|---|---|
| 1 | 3.0 | 6.0 | — | 8.784 | 6.0 | — | The available power does not meet the system usage requirement, so you cannot power the entire system with this power supply configuration and mode. |
| 2 | 3.0 | 6.0 | 3.0 | 8.784 | 6.0 | 6.0 | The available power does not meet the system usage, so you cannot power the entire system with this power supply configuration and mode. |
| 3 | 3.0 | 6.0 | 7.5 | 8.784 | 9.0 | 7.5 | The available power exceeds the system usage, so you can power the entire system with this power supply configuration and mode. |

–  Input source redundancy mode—To activate this power mode, use the **power redundancy-mode insrc_redundant** command. The reserve power is the greater of power outputs for the two grids, and the available power becomes the lesser of power outputs for the two grids.

For example, suppose your system has the following setup:

Grids 1 and 2 each input 220 V to the power supply units.
Power supply units 1 and 2 each output 6 kW.
Current usage requirement is 8.784 kW.

Then the following three scenarios explain what happens for different numbers of power supply units that you install:

Scenario 1: If you do not add a power supply unit, the reserve power is 6 kW (3 kW for one power supply unit and 3 kW for the other power supply unit), and the available power is 6 kW (3 kW for one power supply unit plus 3 kW for the other power supply unit). The available power does not meet the device usage requirement, so you cannot power the entire device.

Scenario 2: If you add a power supply that outputs 3 kW, the reserve power is 9 kW (3 kW for three power supply units), and the available power is 6 kW (3 kW for each of two power supply units). The available power does not meet the system usage requirement, so you cannot power the entire device.

Scenario 3: If you add a power supply unit that outputs 7.5 kW, the reserve power is 9.75 kW (3 kW for two power supply units and 3.75 kW for the new power supply unit), and the available power is 9.75 kW (3 kW for two power supply units and 3.75 kW for the new power supply unit). The available power exceeds the device usage requirement, so you can power up all of the modules and fan trays in the device.

Table 6-5 shows the results for each scenario.

*Table 6-5        Input Source Redundancy Mode Scenarios*

| Scenario | Power Supply 1 (kW) | Power Supply 2 (kW) | Power Supply 3 (kW) | System Usage (kW) | Available Power (kW) | Reserve Power (kW) | Result |
|---|---|---|---|---|---|---|---|
| 1 | 6.0 | 6.0 | - | 8.784 | 6.0 | 6.0 | Available power (the power supply output for either grid) does not meet the system usage requirement. |
| 2 | 6.0 | 6.0 | 3.0 | 8.784 | 9.0 | 6.0 | The power supply output for one grid meets the system usage requirement, but the power supply output for the other grid does not meet the system usage requirement. |
| 3 | 6.0 | 6.0 | 7.5 | 8.784 | 9.75 | 9.75 | The power supply output for both grids meet the meet the system usage requirement. |

– Full redundancy mode—To activate this power mode, use the **power redundancy -mode redundant** command. The reserve power is the greater amount of reserve power for power supply redundancy and input source redundancy, and the available power is the lesser amount of available power for the same two redundancy modes.

For example, suppose your system has the following setup:

Grids A and B each provide 220 V.
Power supply units 1 and 2 each output 6.0 kW.
Device usage requirement is 8.784 kW.

Then the following three scenarios explain what happens for different numbers of power supply units that you install:

Scenario 1: If you do not add a power supply unit, the reserve power is 6 kW and the available power is 6 kW. The available power does not meet the device usage requirement, so you cannot power up the entire device.

Scenario 2: If you add a 3-kW power supply unit, the reserve power is 9 kW (3 kW for three power supply units on one grid), and the available power is 6 kW (3 kW for two power supply units on a second grid). The available power does not meet the device usage requirement, so you cannot power up the entire device.

Scenario 3: If you add a 6-kW power supply unit, the reserve power is 9 kW (3 kW for three power supply units on the same grid), and the available power is 9 kW (3 kW for three power supply units on a second grid). The available power meets the device usage requirements, so you can power up the entire device.

Table 6-5 shows the results for each scenario.

*Table 6-6    Full Redundancy Mode Scenarios*

| | | | | | Input Source Mode | | Power Supply Mode | | |
|---|---|---|---|---|---|---|---|---|---|
| Scenario | Power Supply 1 (kW) | Power Supply 2 (kW) | Power Supply 3 (kW) | System Usage (kW) | Available Power (kW) | Reserve Power (kW) | Available Power (kW) | Reserve Power (kW) | Result |
| 1 | 6.0 | 6.0 | — | 8.784 | 6.0 | 6.0 | 6.0 | 6.0 | Available power does not meet the device usage requirement. |
| 2 | 6.0 | 6.0 | 3.0 | 8.784 | 6.0 | 9.0 | 9.0 | 6.0 | Available power for the power supply mode is sufficient but the available power for the input source mode is insufficient, so the available power does not meet the device usage requirement. |
| 3 | 6.0 | 6.0 | 6.0 | 8.784 | 9.0 | 9.0 | 12.0 | 6.0 | Available power for both modes meets the device usage requirement, so you can power up the entire device. |

# Information About Modules

The following sections explain how you can manage operations for the device modules:

- Supervisor Modules, page 6-14
- I/O Modules, page 6-15
- Fabric Modules, page 6-15

## Supervisor Modules

The Cisco Nexus 7010 device has one or two supervisor modules. When it has two supervisors, one supervisor is automatically active while the other is in standby mode. If the active supervisor goes down or is disconnected for replacement, the standby supervisor automatically becomes active. To understand the terms used for the supervisors, see Table 6-7.

Supervisor modules are automatically powered up and started with the device.

*Table 6-7    Supervisor Module Terms and Usage in Console Displays*

| Module Terms | Fixed or Relative | Usage |
|---|---|---|
| module-5 and module-6 | Fixed usage | module-5 always refers to the supervisor module in slot 5 and module-6 always refers to the supervisor module in slot 6. |
| sup-1 and sup-2 | Fixed usage | sup-1 always refers to the supervisor module in slot 5 and sub-2 always refers to the supervisor module in slot 6. |

*Table 6-7        Supervisor Module Terms and Usage in Console Displays (continued)*

| Module Terms | Fixed or Relative | Usage |
|---|---|---|
| sup-active and sup-standby | Relative usage | sup-active refers to the active supervisor module—relative to the slot that contains the active supervisor module.<br><br>sup-standby refers to the standby supervisor module—relative to the slot that contains the standby supervisor module. |
| sup-local and sup-remote | Relative usage | If you are logged into the active supervisor, sup-local refers to the active supervisor module and sup-remote refers to the standby supervisor module.<br><br>If you are logged into the standby supervisor, sup-local refers to the standby supervisor module (the one that you are logged into.) There is no sup-remote available from the standby supervisor module (you cannot access a file system on the active supervisor). |

## I/O Modules

Cisco Nexus 7000 Series devices support the following I/O modules in slots 1 through 4 and 7 through 10:

- 48-port 10/100/1000 Ethernet module
- 48-port 1 Gigabit Ethernet module
- 32-port 10 Gigabit Ethernet module

## Fabric Modules

Cisco Nexus 7000 Series devices support up to five fabric modules in the back of the chassis.

# Verifying the Status of a Module

Before you begin configuring the device, you need to ensure that the modules in the chassis are functioning as designed. To verify the status of a module at any time, enter the **show module** command. The interfaces in each module are ready to be configured when the ok status is displayed in the **show module** command output. See Example 6-5.

*Example 6-5    Displaying Module Information*

```
switch# show module
Mod  Ports  Module-Type                     Model             Status
---  -----  ------------------------------  ----------------  -----------
6    0      Supervisor module-1X            N7K-SUP1          active *

Mod  Sw             Hw      World-Wide-Name(s) (WWN)
---  -------------  ------  -------------------------------------------------
6    4.0(0.855)     0.34051  --
```

```
Mod  MAC-Address(es)                        Serial-Num
---  -------------------------------------  ----------
6    00-1b-54-c1-20-90 to 00-1b-54-c1-28-90  JAB1152011J

* this terminal session

switch#
```

The Status column in the output should display an ok status for switching modules and an active or standby (or HA-standby) status for supervisor modules. If the status is either ok or active, you can continue with your configuration.

**Note** A standby supervisor module reflects the HA-standby status if the HA switchover mechanism is enabled. If the warm switchover mechanism is enabled, the standby supervisor module reflects the standby status.

For information about the states through which a switching module progresses, see the "Checking the State of a Module" section on page 6-16.

# Checking the State of a Module

If your chassis has more than one I/O module, you can check the progress by repeatedly using the **show module** command and viewing the Status column each time.

The I/O module goes through a testing and an initializing stage before displaying an ok status. Table 6-8 describes the possible states in which a module can exist.

*Table 6-8        Module States*

| show module Command Status Output | Description |
| --- | --- |
| powered up | The hardware has electrical power. When the hardware is powered up, the software begins booting. |
| testing | The switching module has established connection with the supervisor and the switching module is performing bootup diagnostics. |
| initializing | The diagnostics have completed successfully and the configuration is being downloaded. |
| failure | The device detects a switching module failure upon initialization and automatically attempts to power-cycle the module three times. After the third attempt, the module powers down. |
| ok | The device is ready to be configured. |
| power-denied | The device detects insufficient power for a switching module to power up. |
| active | This module is the active supervisor module and the device is ready to be configured. |
| HA-standby | The HA switchover mechanism is enabled on the standby supervisor module. |

# Connecting to a Module

At any time, you can connect to any module by using the **attach module** command. Once you are at the module prompt, you can obtain further details about the module by using module-specific commands in EXEC mode.

## SUMMARY STEPS

1. **attach module** *number*

2. **dir bootflash**

## DETAILED STEPS

To attach to a module, follow these steps:

|  | Command | Purpose |
|---|---|---|
| Step 1 | **attach module** *slot_number*<br><br>**Example:**<br>switch# attach module 6<br>switch(standby)# | Provides direct access to the specified module (in this example, the standby supervisor module is in slot 6). |
| Step 2 | **dir bootflash**<br><br>**Example:**<br>switch# dir bootflash:<br>   80667580    Feb 21 22:04:59 2008  is855.S7<br>   22168064    Feb 21 22:04:19 2008  ks855.S7<br>      16384    Jan 03 19:56:00 2005  lost+found/<br><br>Usage for bootflash://sup-local<br>  234045440 bytes used<br> 1684602880 bytes free<br> 1918648320 bytes total<br>switch# | Provides the available space information for the standby supervisor module.<br><br>**Note**   Use the **exit** command to exit the module-specific prompt.<br><br>**Tip**   If you are not accessing the switch from a console terminal, this step is the only way to access the standby supervisor module. |

You can also use the **attach module** command to display the standby supervisor module information, although you cannot configure the standby supervisor module using this command.

# Shutting Down Modules

This section includes the following topics:

- Shutting Down a Supervisor or I/O Module, page 6-18
- Shutting Down a Fabric Module, page 6-18

# Shutting Down a Supervisor or I/O Module

To perform a graceful shutdown of a supervisor or I/O module, use the **out-of-service module** command to specify the slot with that module as follows:

```
switch# out-of-service module slot
```

# Shutting Down a Fabric Module

To perform a graceful shutdown of a fabric module, use the **out-of-service xbar** command to specify the fabric slot with that module as follows:

```
switch# out-of-service xbar slot
```

# Information About Module Temperature

This section includes the following topics:

## Overview of Module Temperatures

Built-in, automatic sensors are provided in all switches in the Cisco Nexus 7000 Series to monitor your device at all times.

Each module (supervisor, I/O, and fabric) has temperature sensors with two thresholds:

- Minor temperature threshold—When a minor threshold is exceeded, a minor alarm occurs and the following actions occur for all four sensors:
    - System messages are displayed.
    - Call Home alerts are sent (if configured).
    - SNMP notifications are sent (if configured).
- Major temperature threshold—When a major threshold is exceeded, a major alarm occurs and the following actions occur:
    - For sensors 1, 3, and 4 (outlet and onboard sensors), the following actions occur:

      System messages are displayed.

      Call Home alerts are sent (if configured).

      SNMP notifications are sent (if configured).
    - For sensor 2 (intake sensor), the following actions occur:

      If the threshold is exceeded in a switching module, only that module is shut down.

      If the threshold is exceeded in an active supervisor module with HA-standby or standby present, only that supervisor module is shut down and the standby supervisor module takes over.

If you do not have a standby supervisor module in your device, you have 2 minutes to decrease the temperature. During this interval, the software monitors the temperature every 5 seconds and continuously sends system messages as configured.

**Tip**    We recommend that you install dual supervisor modules. If you are using a Cisco Nexus 7000 Series device without dual supervisor modules, we recommend that you immediately replace the fan module if just one fan is not working.

**Note**    A threshold value of –127 indicates that no thresholds are configured or applicable.

# Displaying Module Temperature

You can display temperature readings for module temperature sensors by using the **show environment temperature** command. See Example 6-6.

**Example 6-6    Displaying Temperature Information for Hardware**

```
switch# show environment temperature


Temperature:
-------------------------------------------------------------------
Module    Sensor        MajorThresh    MinorThres    CurTemp    Status
                        (Celsius)      (Celsius)     (Celsius)
-------------------------------------------------------------------
1         Crossbar(s5)  105            95            60         Ok
1         QEng1Sn1(s12) 115            110           70         Ok
1         QEng1Sn2(s13) 115            110           68         Ok
1         QEng1Sn3(s14) 115            110           67         Ok
1         QEng1Sn4(s15) 115            110           68         Ok
1         QEng2Sn1(s16) 115            110           70         Ok
1         QEng2Sn2(s17) 115            110           68         Ok
1         QEng2Sn3(s18) 115            110           68         Ok
1         QEng2Sn4(s19) 115            110           68         Ok
1         L2Lookup(s27) 115            105           57         Ok
1         L3Lookup(s28) 120            110           62         Ok
2         Crossbar(s5)  105            95            65         Ok
2         QEng1Sn1(s12) 115            110           70         Ok
2         QEng1Sn2(s13) 115            110           68         Ok
2         QEng1Sn3(s14) 115            110           67         Ok
2         QEng1Sn4(s15) 115            110           68         Ok
2         QEng2Sn1(s16) 115            110           69         Ok
2         QEng2Sn2(s17) 115            110           68         Ok
2         QEng2Sn3(s18) 115            110           67         Ok
2         QEng2Sn4(s19) 115            110           68         Ok
2         L2Lookup(s27) 115            105           56         Ok
2         L3Lookup(s28) 120            110           63         Ok
5         Outlet1 (s1)  125            125           49         Ok
5         Outlet2 (s2)  125            125           37         Ok
5         Intake  (s3)  60             42            32         Ok
5         EOBC_MAC(s4)  105            95            43         Ok
5         CPU     (s5)  105            95            40         Ok
5         Crossbar(s6)  105            95            61         Ok
5         Arbiter (s7)  110            100           67         Ok
5         CTSdev1 (s8)  115            105           43         Ok
```

```
5         InbFPGA (s9)    105           95           44           Ok
5         QEng1Sn1(s10)   115           105          60           Ok
5         QEng1Sn2(s11)   115           105          59           Ok
5         QEng1Sn3(s12)   115           105          56           Ok
5         QEng1Sn4(s13)   115           105          57           Ok
xbar-1    Outlet  (s1)    125           125          38           Ok
xbar-1    Intake  (s2)    60            42           32           Ok
xbar-1    Crossbar(s3)    105           95           56           Ok
xbar-2    Outlet  (s1)    125           125          39           Ok
xbar-2    Intake  (s2)    62            42           31           Ok
xbar-2    Crossbar(s3)    105           95           56           Ok
switch#
```

# Displaying Environment Information

You can display all of the environment-related device information by using the **show environment** command. See Example 6-7.

***Example 6-7    Displaying All Environmental Information***

```
switch# show environment


Clock:
----------------------------------------------------------
Clock           Model           Hw        Status
----------------------------------------------------------
A               Clock Module    --        NotSupported/None
B               Clock Module    --        NotSupported/None


Fan:
----------------------------------------------------------
Fan             Model           Hw        Status
----------------------------------------------------------
ChassisFan1     N7K-C7010-FAN-S 0.410     Ok
ChassisFan2     N7K-C7010-FAN-S 0.410     Ok
ChassisFan3     N7K-C7010-FAN-F 0.209     Ok
ChassisFan4     N7K-C7010-FAN-F 0.209     Ok
Fan_in_PS1      --              --        Ok
Fan_in_PS2      --              --        Ok
Fan_in_PS3      --              --        Absent


Temperature:
---------------------------------------------------------------------
Module    Sensor        MajorThresh   MinorThres   CurTemp     Status
                        (Celsius)     (Celsius)    (Celsius)
---------------------------------------------------------------------
6         Outlet1 (s1)  125           125          47           Ok
6         Outlet2 (s2)  125           125          40           Ok
6         Intake  (s3)  60            42           31           Ok
6         EOBC_MAC(s4)  105           95           44           Ok
6         CPU     (s5)  105           95           39           Ok
6         Crossbar(s6)  105           95           58           Ok
6         Arbiter (s7)  110           100          61           Ok
6         CTSdev1 (s8)  115           105          41           Ok
6         InbFPGA (s9)  105           95           45           Ok
6         QEng1Sn1(s10) 115           105          62           Ok
6         QEng1Sn2(s11) 115           105          60           Ok
```

```
6        QEng1Sn3(s12)   115            105            59             Ok
6        QEng1Sn4(s13)   115            105            60             Ok
xbar-1   Outlet  (s1)    125            125            35             Ok
xbar-1   Intake  (s2)     60             42            30             Ok
xbar-1   Crossbar(s3)    105             95            45             Ok
xbar-2   Outlet  (s1)    125            125            37             Ok
xbar-2   Intake  (s2)     62             42            29             Ok
xbar-2   Crossbar(s3)    105             95            45             Ok


Power Supply:
Voltage: 50 Volts
--------------------------------------------------------
PS   Model              Power      Power      Status
                        (Watts)    (Amp)
--------------------------------------------------------
1    N7K-AC-6.0KW       6000.00    120.00     Ok
2    N7K-AC-6.0KW       6000.00    120.00     Ok
3    ------------          0.00      0.00     Absent


Mod Model               Power    Power      Power     Power      Status
                        Requested Requested Allocated Allocated
                        (Watts)  (Amp)      (Watts)   (Amp)
--- ------------------- ------- ---------- --------- ---------- ----------
6    N7K-SUP1           400.00   8.00       400.00    8.00       Powered-Up
Xb1  N7K-C7010-FAB-1     60.00   1.20        60.00    1.20       Powered-Up
Xb2  N7K-C7010-FAB-1     60.00   1.20        60.00    1.20       Powered-Up


Power Usage Summary:
--------------------
Power Supply redundancy mode:             Redundant
Power Supply redundancy operational mode:  Redundant

Total Power Capacity                      6000.00 W

Power reserved for Supervisor(s)           800.00 W
Power reserved for Fan Module(s)          2002.00 W
Power reserved for Fabric Module(s)        300.00 W
Power currently used by Modules              0.00 W

                                        -------------
Total Power Available                     2898.00 W
                                        -------------
switch#
```

# Reloading Modules

You can reload the entire device, reset specific modules in the device, or reload the image on specific modules in the device.

This section includes the following topics:

# Reloading the Device

To reload the device, use the **reload** command without any options. When you use this command, you reboot the device.

**Note**    If you need to use the **reload** command, be sure to save the running configuration by using the **copy running-config startup-config** command beforehand.

# Power Cycling Modules

To power cycle any module, follow these steps:

**Step 1**    Identify the module that needs to be reset.

**Step 2**    Reset the identified module by entering the **reload module** command. This command power cycles the selected module.

```
switch# reload module number
```

The *number* indicates the slot in which the identified module resides.

**Caution**    Reloading a module disrupts traffic through the module.

# Saving the Module Configuration

To save the new configuration to nonvolatile storage, use the **copy running-config startup-config** command from EXEC mode. Once you enter this command, the running and the startup copies of the configuration are identical.

Table 6-9 displays various scenarios when module configurations are preserved or lost.

.

*Table 6-9        Switching Module Configuration Status*

| Scenario | Consequence |
|---|---|
| A particular switching module is removed and you used the **copy running-config startup-config** command again. | The configured module information is lost. |
| A particular switching module is removed and the same switching module is replaced before you enter the **copy running-config startup-config** command again. | The configured module information is preserved. |
| A particular switching module is removed and replaced with the same type switching module, and you entered the **reload module** *number* command. | The configured module information is preserved. |
| A particular switching module is reloaded when you enter the **reload module** *number* command. | The configured module information is preserved. |

# Purging the Module Configuration

To delete the configuration in an empty slot or in a slot with a powered-down I/O module, use the **purge module** *slot* **running-config** command from EXEC mode. This command clears the running configuration for the specified slot. This command does not work on supervisor modules or on any slot that currently has a powered-up module. This command only works on an empty slot (where the specified module once resided) or on a slot with a powered-down I/O module.

The **purge module** command clears the configuration for any module that previously existed in a slot and has since been removed or powered down. While the module was in that slot, some parts of the configuration may have been stored in the running configuration and cannot be reused (for example, IP addresses), unless you clear that from the running configuration.

For example, suppose you create an IP storage configuration with a 48-port 10/100/1000 Ethernet module in slot 3 in Device A. This module uses IP address 10.1.5.500. You decide to remove this I/O module and move it to Device B, and you no longer need the IP address 10.1.5.500. If you try to configure this unused IP address, you will receive an error message that prevents you from proceeding with the configuration. In this case, you need to enter the **purge module 3 running-config** command to clear the old configuration in Device A before using this IP address.

# Powering Off I/O Modules

By default, all fabric modules are configured to be in the power up state.

**SUMMARY STEPS**

1. **config t**
2. [**no**] **poweroff module** *slot_number*

**DETAILED STEPS**

|  | Command | Purpose |
|---|---|---|
| Step 1 | `config t`<br><br>**Example:**<br>`switch# config t`<br>`switch(config)#` | Enters configuration mode. |
| Step 2 | `poweroff module` *slot_number*<br><br>**Example:**<br>`switch(config)# poweroff module 1`<br>`switch(config)#` | Powers off the specified module (fabric module 1) in the device. |
|  | `no poweroff module` *slot_number*<br><br>**Example:**<br>`switch(config)# no poweroff module 1`<br>`switch(config)#` | Powers up the specified module (fabric module 1) in the device. |

# Information About Fan Trays

Hot-swappable fan trays are provided in all devices in the Cisco Nexus 7000 Series to manage airflow and cooling for the entire device. Each fan tray contains multiple fans to provide redundancy. The device can continue functioning in the following situations:

- One or more fans fail within a fan tray—Even with multiple fan failures, the Cisco Nexus 7000 Series device can continue functioning. When a fan fails within a tray, the functioning fans in the module increase their speed to compensate for the failed fans.

- The fan tray is removed for replacement—The fan tray is designed to be removed and replaced while the system is operating without presenting an electrical hazard or damage to the system. When replacing a failed fan tray in a running system, be sure to promptly replace the fan tray.

**Tip**  If one or more fans fail within a fan tray, the Fan Status LED turns red. A fan failure could lead to temperature alarms if not corrected immediately.

The fan status is continuously monitored by the software. In case of a fan failure, these actions occur:

- System messages are displayed.

- Call Home alerts are sent (if configured).

- SNMP notifications are sent (if configured).

Use the **show environment fan** command to display the fan module status (see Example 6-8).

***Example 6-8    Displays Chassis Fan Information***

```
switch# show environment fan
-------------------------------------------------------
Fan            Model            Hw          Status
-------------------------------------------------------
Chassis        DS-9SLOT-FAN     1.2         ok
PS-1           --               --          ok
PS-2           --               --          absent
```

The possible Status field values for a fan module on the Cisco Nexus 7000 Series devices are as follows:

- If the fan module is operating properly, the status is ok.
- If the fan is physically absent, the status is absent.
- If the fan is physically present but not working properly, the status is failure.

On the Cisco Nexus 7010, each system fan module has 15 fans. If the State field for one of these fans contains "failure" in the **show environment fan** command output, it also displays the number of the failing fans (see Example 6-9).

***Example 6-9    Displaying a Cisco Nexus 7010 System Fan Tray Failure***

```
switch# show environment fan


Fan:
-------------------------------------------------------
Fan             Model              Hw         Status
-------------------------------------------------------
ChassisFan1     N7K-C7010-FAN-S    0.410      Ok
ChassisFan2     N7K-C7010-FAN-S    0.410      Ok
ChassisFan3     N7K-C7010-FAN-F    0.209      Ok
ChassisFan4     N7K-C7010-FAN-F    0.209      Ok
Fan_in_PS1      --                 --         Ok
Fan_in_PS2      --                 --         Ok
Fan_in_PS3      --                 --         Absent


switch#
```

# EPLD Configuration

The Cisco Nexus 7000 Series devices contain several programmable logical devices (PLDs) that provide hardware functionalities in all modules. Cisco provides EPLD image upgrades to enhance hardware functionality or to resolve known issues. PLDs include electronic programmable logical devices (EPLDs), field programmable gate arrays (FPGAs), and complex programmable logic devices (CPLDs). In this document, the term EPLD is used for FPGA and CPLDs.

This section includes the following topics:

## System Requirements

This section includes the following topics:

- Supported Device Hardware, page 6-26
- Supported Device Operating Systems, page 6-26

## Supported Device Hardware

The Cisco Nexus 7000 Series device must include the following hardware:

- One or two supervisor modules, each with at least 120 MB of available bootflash or slot0 memory
- One or more I/O modules
- One or more fabric modules
- Two fabric fan tray modules
- Two system fan tray modules

You must be able to access the system through a console, SSH, or Telnet.

You must have administrator privileges to work with the Nexus 7000 Series device.

## Supported Device Operating Systems

The Cisco Nexus 7000 Series device must be running the Cisco NX-OS operating system, which is used to perform the EPLD upgrades.

# Updated EPLDs

Depending on the Cisco NX-OS release that you are using, the EPLDs that you download and reinstall can include newly updated EPLDs. Table 10 lists the newly updated EPLDs for Cisco NX-OS release 4.1(2) and the hardware that they affect. Table 11 lists all of the EPLD versions for the Cisco NX-OS release 4.1(2).

.

*Table 10        Updated EPLDs for the Cisco NX-OS Release 4.1(2)*

| NX-OS Release | Module Type | EPLD Device | New EPLD Version |
|---|---|---|---|
| 4.1(2) | Supervisor module | Power Manager | 3.7 |
| | | IO | 3.26 |
| | | Local Bus CPLD | 3.0 |
| | 48-port 10/100/1000 Mbps Ethernet I/O module | Power Manager | 5.4 |
| | | IO | 2.11 |
| | 48-port 1 Gbps Ethernet I/O module | Power Manager | 4.6 |
| | | IO | 1.3 |
| | | SFP | 1.4 |
| | | Forwarding Engine | 1.6 |

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**Table 10    Updated EPLDs for the Cisco NX-OS Release 4.1(2) (continued)**

| NX-OS Release | Module Type | EPLD Device | New EPLD Version |
|---|---|---|---|
| | 32-port 10 Gbps Ethernet I/O module | Power Manager | 4.6 |
| | | IO | 1.13 |
| | Fabric Module (Cisco Nexus 7010) | Power Manager | 2.9 |
| | Fabric Module (Cisco Nexus 7018) | Power Manager | 1.1 |

**Table 11    Complete List of EPLDs for the Cisco NX-OS Release 4.1(2)**

| Module Type | EPLD Device | EPLD Version |
|---|---|---|
| Supervisor module | Power Manager | 3.7 |
| | IO | 3.26 |
| | Inband | 1.7 |
| | Local Bus CPLD | 3.0 |
| | CMP CPLD | 6.0 |
| 10/100/1000 Mbps Ethernet I/O module | Power Manager | 5.4 |
| | IO | 2.11 |
| | Forwarding Engine | 1.6 |
| 10 Gbps Ethernet I/O module | Power Manager | 4.6 |
| | IO | 1.13 |
| | Forwarding Engine | 1.6 |
| | FE Bridge | 186.3 |
| | LinkSec Engine | 1.8 |
| 1 Gbps Ethernet I/O module | Power Manager | 4.6 |
| | IO | 1.3 |
| | SFP | 1.4 |
| | Forwarding Engine | 1.6 |
| Fabric module (Cisco Nexus 7010) | Power Manager | 2.9 |
| Fabric module (Cisco Nexus 7018) | Power Manager | 1.1 |
| Fan | Fan Controller | 0.7 |

**Note**    To list the EPLDs running on your device, use the **show version** *module_number* **epld** command. If any of the versions that you list are older than what is listed in Table 11, it is recommended that you update the EPLDs.

# Installation Guidelines

You can upgrade (or downgrade) EPLDs using CLI commands on the Cisco Nexus 7000 Series device. Follow these guidelines when you upgrade or downgrade EPLDs:

- You can execute an upgrade from the active supervisor module only. All the modules, including the active supervisor module, can be updated individually.

- You can individually update each module whether it is online or offline as follows:

    - If you upgrade EPLD images on an online module, only the EPLD images with version numbers that differ from the new EPLD images are upgraded.

    - If you upgrade EPLD images on an offline module, all of the EPLD images are upgraded.

- On a system that has two supervisor modules, upgrade the EPLDs for the standby supervisor and then switch the active supervisor to the standby mode to upgrade its EPLDs. On a system that has only one supervisor module, you can upgrade the active supervisor, but this will distrupt its operations during the upgrade.

- If you interrupt an upgrade, you must upgrade the module that is being upgraded again.

- The upgrade process disrupts traffic on the targeted module.

- Do not insert or remove any modules while an EPLD upgrade is in progress.

# Downloading the EPLD Images

Before you can prepare the EPLD images for installation, you must download them to the FTP or management server.

To download the EPLD images, follow these steps:

**Step 1**  From a browser, go to the following URL:

http://www.cisco.com

The browser will display the Cisco website.

**Step 2**  From the Products & Services tab, choose **Switches**.

The Switches page opens.

**Step 3**  In the Data Center area, click the arrow next to View Products.

The page lists the Data Center products.

**Step 4**  Click **Nexus 7000**.

The Cisco Nexus 7000 Series Switches page opens.

**Step 5**  In the Support area, click **Download Software**.

The Downloads page opens and lists the Data Center switches.

**Step 6**  Choose **Data Center Switches** > **Cisco Nexus 7000 Series Switches** > **Cisco Nexus 7000 10-Slot Switch**.

The Log In page opens.

**Step 7**  If you are an existing user, enter your username in the **User Name** field and your password in the **Password** field. If you are a new user, click Register Now and provide the required information before returning to the Log In page and logging in with your new username.

The Downloads page lists the software types that can be downloaded for the device that you specified.

**Step 8**     Click **NX-OS EPLD Updates**.

The Downloads page lists software releases that you can download.

**Step 9**     Choose **Latest Releases > 4.0(2)**.

The Downloads page displays image information, including a link to the downloadable Tar file, to the right of the the releases.

**Step 10**     Click the link for the Tar file.

The Downloads page displays a Download button and lists information for the Tar file.

**Step 11**     Click **Download**.

The Supporting Documents page opens to display the rules for downloading the software.

**Step 12**     Read the rules and click **Agree**.

A File Download dialog box opens to ask if you want to open or save the images file.

**Step 13**     Click **Save**.

The Save As dialog box appears.

**Step 14**     Indicate where to save the Tar file and click **Save**.

The Tar file saves to the location that you specified.

---

You are ready to prepare the EPLD images for Installation (see the ).

# Preparing the EPLD Images for Installation

Before you can update the EPLD images for each of your system modules, you must determine the Cisco NX-OS version that your system is using, make sure that there is space for the new EPLD images, and download the images.

To prepare the EPLD images for installation, follow these steps:

---

**Step 1**     Log into the device through the console port, an SSH session, or a Telnet session.

**Step 2**     Verify that the device is using the expected version of the Cisco NX-OS operating system. The kickstart and system lines indicate the Cisco NX-OS version. This step determines the versions of EPLD images that you must download.

```
switch# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2008, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1.. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php
Software
  BIOS:      version 3.17.0
```

```
 loader:    version N/A
 kickstart: version 4.0(2) [gdb]
 system:    version 4.0(2) [gdb]
...
```

**Step 3**    Verify that you have 120 MB of free space on the active or standby supervisor memory devices for the EPLD images that you will be downloading by using the **dir bootflash:** or **dir slot0:** commands. By default, these commands display the used and free memory for the active supervisor. If your system has an additional supervisor (a standby supervisor), use the **show module** command to find the module number for the other supervisor, use the **attach module** command to attach to the module number, and then use the **dir bootflash:** or **dir slot0:** command to determine the amount of used and free memory. See Example 10 to determine the amount of available bootflash memory, and see Example 11 to determine the amount of available slot0 memory.

*Example 10    Determining the Amount of Available Bootflash Memory*

```
switch# dir bootflash:
    4096     Mar 18 17:31:11 2008 bak/
 2429706     May 23 10:57:10 2008 dplug
89154513     May 27 22:04:37 2008 n7-dk9-nk
89151767     May 23 16:06:01 2008 n7-dk9-nk-old
 2429706     May 23 10:53:50 2008 n7000-s1-debug-sh.4.0.2.bin1
22171136     May 23 10:55:40 2008 n7000-s1-kickstart.4.0.2.bin1
    4096     May 23 13:03:37 2008 newer-fs/
    4096     May 28 15:13:30 2008 nk/
     127     Mar 20 16:37:59 2008 setip.sh

Usage for bootflash://sup-local
572186624 bytes used
306606080 bytes free
878792704 bytes total

switch# show module
Mod  Ports  Module-Type                      Model              Status
---  -----  -------------------------------- ------------------ ------------
2    32     10 Gbps Ethernet Module           N7K-M132XP-12      ok
5    0      Supervisor module-1X              N7K-SUP1           ha-standby
6    0      Supervisor module-1X              N7K-SUP1           active *
...
switch# attach module 5
...
switch(standby)# dir bootflash:
...
    4096     Mar 18 17:31:11 2008 bak/
 2429706     May 23 10:57:10 2008 dplug
89154513     May 27 22:04:37 2008 n7-dk9-nk
89151767     May 23 16:06:01 2008 n7-dk9-nk-old
 2429706     May 23 10:53:50 2008 n7000-s1-debug-sh.4.0.2.bin1
22171136     May 23 10:55:40 2008 n7000-s1-kickstart.4.0.2.bin1
    4096     May 23 13:03:37 2008 newer-fs/
    4096     May 28 15:13:30 2008 nk/
     127     Mar 20 16:37:59 2008 setip.sh

Usage for bootflash://sup-local
572186624 bytes used
306606080 bytes free
878792704 bytes total
```

*Example 11    Determining the Amount of Available Slot0 Memory*

```
switch# dir slot0:
```

```
             25     Apr 28 23:07:28 2008  slot0

Usage for slot:
  642273280 bytes used
  261824512 bytes free
  904097792 bytes total

switch# show module
Mod  Ports  Module-Type                     Model              Status
---  -----  ------------------------------- ------------------ ------------
2    32     10 Gbps Ethernet Module         N7K-M132XP-12      ok
5    0      Supervisor module-1X            N7K-SUP1           ha-standby
6    0      Supervisor module-1X            N7K-SUP1           active *
...
switch# attach module 5
...
switch(standby)# dir slot0:
         25     Apr 28 23:07:28 2008  slot0

Usage for slot:
  642273280 bytes used
  261824512 bytes free
  904097792 bytes total
```

**Step 4**    If there is not at least 120 MB of memory free for the EPLD files, delete some unneeded files, such as earlier images, so there is enough free memory.

```
switch# delete bootflash:n7000-s1-kickstart.4.0.1.bin
switch# attach module 5
switch(standby)#
```

**Step 5**    Copy the EPLD image file from the FTP or management server to the bootflash or slot0 memory in the active supervisor module. The following example shows how to copy from the FTP server to the bootflash memory.

```
switch# copy ftp://10.1.7.2/n7000-s1-epld.4.0.2.img bootflash:n7000-s1-epld.4.0.2.img
```

Copy the EPLD image to the standby supervisor.

```
switch# copy bootflash:n7000-s1-epld.4.0.2.img
bootflash://sup-standby/n7000-s1-epld.4.0.2.img
```

You are ready to upgrade the EPLD images (see the ).

# Upgrading EPLD Images

When you start upgrading the EPLD images for a module, the Cisco NX-OS software tries to list the current and new versions for each EPLD. If the module is installed and online, the software reports both the installed and new versions of each EPLD, and where there is a difference, the software will upgrade (or downgrade) to the new version when you confirm that the upgrade should occur. For a module that is installed but offline, the software cannot determine the installed versions of its EPLDs so it upgrades all of the EPLDs for that module when you confirm the upgrade. For a module that is not installed, the software displays an error message and does not upgrade the EPLDs.

Example 12 shows how the software reports the current and new EPLD versions for a module that does not need EPLD upgrades. The current and new version numbers for each EPLD are the same.

*Example 12      EPLD Version Comparison Report—No Upgrade Needed*

```
EPLD                                  Curr Ver   New Ver
-------------------------------------------------------
Power Manager                         5.3        5.3
IO                                    2.10       2.10
Forwarding Engine                     1.6        1.6
Module 1 is upto date
```

Example 13 shows how the software reports the current and new EPLD versions for a module that has EPLD images that can be upgraded. According to this report, each of the downloaded Linksec Engine EPLDs has a different version than the same EPLD on the module, so the software will upgrade those EPLDs but will not upgrade the other EPLDs that have the same version numbers. If the new versions have a smaller version number compared to the current version, the software will downgrade the versions.

*Example 13      EPLD Version Comparison Report—Upgrade Needed*

```
EPLD                                  Curr Ver   New Ver
-------------------------------------------------------
Power Manager                         4.4        4.4
IO                                    1.10       1.10
Forwarding Engine                     1.6        1.6
FE Bridge(1)                          186.3      186.3
FE Bridge(2)                          186.3      186.3
Linksec Engine(1)                     1.5        1.7
Linksec Engine(2)                     1.5        1.7
Linksec Engine(3)                     1.5        1.7
Linksec Engine(4)                     1.5        1.7
Linksec Engine(5)                     1.5        1.7
Linksec Engine(6)                     1.5        1.7
Linksec Engine(7)                     1.5        1.7
Linksec Engine(8)                     1.5        1.7
```

The following sections explain how to upgrade the EPLD images for I/O and standby modules, the active supervisor module on single-supervisor systems, fabric modules, and fan tray modules:

- Upgrading the EPLD Images for I/O or Standby Supervisor Modules, page 6-32
- Upgrading EPLDs for the Active Supervisor Module, page 6-34
- Upgrading EPLDs for a Fabric Module, page 6-35
- Upgrading EPLDs for a Fan Tray Module, page 6-36

## Upgrading the EPLD Images for I/O or Standby Supervisor Modules

You can upgrade the EPLD images for an I/O module or standby supervisor module while the system is operational. If you need to upgrade EPLD images for a system with a single supervisor module, see the "Upgrading EPLDs for the Active Supervisor Module" section on page 6-34.

⚠

**Caution**    Upgrading EPLD images for an online I/O module can disrupt traffic going through that module.

To upgrade EPLDs for an I/O module or the standby supervisor module, follow these steps:

**Step 1**    Determine the slot number for each module.

```
switch# show module
```

```
Mod Ports Module-Type                     Model             Status
--- ----- ------------------------------- ----------------- -----------
1   48    10/100/1000 Mbps Ethernet Module N7K-N148GT-11    ok
3   32    10 Gbps Ethernet Module         N7K-M132XP-12     ok
5   0     Supervisor module-1X            N7K-SUP1          active
6   0     Supervisor module-1X            N7K-SUP1          ha-standby
10  48    10/100/1000 Mbps Ethernet Module N7K-M148GT-11    ok


Mod Sw           Hw      World-Wide_name(s) (WWN)
--- ------------ ------  ----------------------------------------------
1   4.0(2)       0.503   --
3   4.0(2)       0.601   --
5   4.0(2)       0.900   --
6   4.0(2)       0.802   --
10  4.0(2)       0.902   --


Mod MAC-Address(es)                       Serial-Num
--- ------------------------------------- ----------
1   00-19-07-6c-c0-6c to 00-19-07-6c-c0-a0 JAB11060144
3   00-1b-54-c1-33-98 to 00-1b-54-c1-33-bc JAB1152010K
5   00-1b-54-c1-16-18 to 00-1b-54-c1-16-20 JAB114902HF
6   00-19-07-c1-00-b8 to 00-1b-54-c1-00-c0 JAB114402JX
10  00-1b-54-c1-07-88 to 00-1b-54-c1-07-bc JAB114501RW


* this terminal session
switch#
```

Step 2    Install the EPLDs by entering the **install module** *slot_number* **epld** *url* command.

```
switch# install module 6 epld bootflash:n7000-s1-epld.4.0.2.img


EPLD image file , built on Fri May 16 20:36:39 2008


EPLD                              Curr Ver   New Ver
--------------------------------------------------------
Power Manager                     3.4        3.6
IO                                3.23       3.23
Inband                            1.7        1.7
Local Bus CPLD                    2.1        2.1
CMP CPLD                          6.0        6.0
WARNING: Upgrade process could take upto 30 minutes.

Standby supervisor is being upgraded.
Do you want to continue (y/n) ?
```

Step 3    Begin upgrading the EPLD images by entering Y for yes.

```
Do you want to continue (y/n) ? Y
```

Step 4    For releases 4.0(2) or earlier, if you updated the power management EPLD image, you must reset the power for the module so that EPLD can take effect (this is not required for release 4.0(3) or later). You can reset the power in one of the following two ways:

- To reset the power for the module, physically remove the module and reinstall it.

> **Note**    A module reload or just pressing the ejector buttons on the module is not sufficient for this reset requirement.

- To reset the entire system, power cycle the system.

To confirm the EPLD upgrade, see the "Displaying EPLD Versions for an I/O or Supervisor Module"

⚠

**Caution**    Resetting the power disrupts any data traffic going through the affected modules. If you power cycle the entire system, all data traffic going through the system at the time of the power cycling is disrupted. This is not necessary for release 4.0(3) or later.

✎

**Note**    As of release 4.0(3) or later, the system automatically loads the new power management EPLD after an upgrade, so it is no longer necessary to reset the power for the module or system.

## Upgrading EPLDs for the Active Supervisor Module

When you upgrade EPLDs on a system with only one supervisor module, data traffic on the device will be affected when you reload the system after the upgrade. If you are upgrading EPLDs for a dual supervisor system, you can upgrade the standby supervisor while the system is operational as explained in the "Upgrading the EPLD Images for I/O or Standby Supervisor Modules"

To upgrade EPLDs for the supervisor module in a system with a single supervisor module, follow these steps:

**Step 1**    Determine the slot number for each module. The active supervisor is in either slot 5 or slot 6.

```
switch# show module
Mod Ports Module-Type                       Model              Status
--- ----- -------------------------------- ------------------ ------------
1   48    10/100/1000 Mbps Ethernet Module N7K-N148GT-11      ok
3   32    10 Gbps Ethernet Module          N7K-M132XP-12      ok
5   0     Supervisor module-1X             N7K-SUP1           active
10  48    10/100/1000 Mbps Ethernet Module N7K-M148GT-11      ok

Mod  Sw            Hw      World-Wide_name(s) (WWN)
---  ------------- ------  -------------------------------------------------
1    4.0(2)        0.503   --
3    4.0(2)        0.601   --
5    4.0(2)        0.900   --
10   4.0(2)        0.902   --

Mod  MAC-Address(es)                        Serial-Num
---  -------------------------------------- ----------
1    00-19-07-6c-c0-6c to 00-19-07-6c-c0-a0 JAB11060144
3    00-1b-54-c1-33-98 to 00-1b-54-c1-33-bc JAB1152010K
5    00-1b-54-c1-16-18 to 00-1b-54-c1-16-20 JAB114902HF
10   00-1b-54-c1-07-88 to 00-1b-54-c1-07-bc JAB114501RW

* this terminal session
switch#
```

**Step 2**    Install the EPLDs by entering the **install module** *slot_number* **epld** *url* command.

```
switch# install module 5 epld bootflash:n7000-s1-epld.4.0.2.img


EPLD image file , built on Fri May 16 20:36:39 2008
```

```
EPLD                                    Curr Ver   New Ver
--------------------------------------------------------
Power Manager                           3.4        3.6
IO                                      3.23       3.23
Inband                                  1.7        1.7
Local Bus CPLD                          2.1        2.1
CMP CPLD                                6.0        6.0
WARNING: Upgrade process could take upto 30 minutes.

Active Supervisor is being upgraded.
Data traffic on the switch will be affected!!
The switch will reload after the upgrade process.
Do you want to continue (y/n) ?
```

**Step 3**  Confirm the upgrade by entering Y for yes.

```
Do you want to continue (y/n) ? Y
\
Module 5 EPLD upgrade is successful
```

The Cisco Nexus 7000 Series system will reload as soon as the upgrade occurs.

**Step 4**  For releases 4.0(2) or earlier, if you updated the power management EPLD image, you must reset the power for the module so that EPLD can take effect (this is not required for release 4.0(3) or later). You can reset the power in one of the following two ways:

- To reset the power for the module, physically remove the module and reinstall it.

> **Note**  A module reload or just pressing the ejector buttons on the module is not sufficient for this reset requirement.

- To reset the entire system, power cycle the system.

To confirm the EPLD upgrade, see the "Displaying EPLD Versions for an I/O or Supervisor Module" section on page 6-37.

> **Caution**  Resetting the power disrupts any data traffic going through the affected modules. If you power cycle the entire system, all data traffic going through the system at the time of the power cycling is disrupted. This is not necessary for release 4.0(3) or later.

> **Note**  As of release 4.0(3) or later, the system automatically loads the new power management EPLD after an upgrade, so it is no longer necessary to reset the power for the module or system.

## Upgrading EPLDs for a Fabric Module

You can upgrade EPLDs for a fabric (Xbar) module while the system is operational if at least one other fabric module is operational.

To upgrade EPLDs for a fabric module, follow these steps:

**Step 1**    Determine which fabric modules are present on the Cisco Nexus 7000 Series device.

```
switch# show module xbar
Xbar Ports  Module-Type                          Model              Status
---  -----  -----------------------------------  ------------------ ------------
1    0      Xbar                                 N7K-C7010-FAB-1    ok
2    0      Xbar                                 N7K-C7010-FAB-1    ok
3    0      Xbar                                 N7K-C7010-FAB-1    ok

Xbar Sw              Hw      World-Wide-Name(s) (WWN)
---  -------------   ------  ----------------------------------------------------
1    NA              0.404   --
2    NA              0.405   --
4    NA              0.405   --

Xbar MAC-Address(es)                          Serial-Num
----------------------------------------      ------------------
1    NA                                       JAB114700WL
2    NA                                       JAB115000LU
4    NA                                       JAB115000LJ

* this terminal session
```

**Step 2**    Install the EPLD images for a fabric module by entering the **install xbar-module** *slot_number* **epld** *url* command.

```
switch# install xbar-module 1 epld bootflash:n7000-s1-epld.4.0.2.img

EPLD image file , built on Fri May 16 20:36:39 2008

EPLD                          Curr Ver    New Ver
------------------------------------------------------
Power Manager                 2.7         2.8
WARNING: Upgrade process could upto 30 minutes.
Module could be powered down and up.

Xbar Module 1 will be powered down now!!
Do you want to continue (y/n) ?  [n]
```

**Step 3**    Confirm the upgrade by entering Y for yes.

```
Do you want to continue (y/n) ?  [n] y
```

To confirm the EPLD upgrade, see the .

## Upgrading EPLDs for a Fan Tray Module

You can upgrade EPLDs for fan tray modules while the system is operational.

To upgrade EPLDs for a fan tray module, follow these steps:

**Step 1**    Display fan tray information, such as the module numbers and fan tray types.

```
switch# show environment fan
```

```
Fan:
--------------------------------------------------------
Fan               Model            Hw         Status
--------------------------------------------------------
Fan1(sys_fan1)                     0.0        Ok
Fan2(sys_fan2)                     0.0        Ok
Fan3(fab_fan1)                     0.0        Ok
Fan4(fab_fan2)                     0.0        Ok
Fan_in_PS1        --               --         Ok
Fan_in_PS2        --               --         Ok
Fan_in_PS3        --               --         Ok
Fan Air Filter : Absent
switch#
```

**Step 2**   Upgrade the EPLD images for the fan tray module by entering the **install fan-module** *slot_number* **epld** *url* command.

```
switch# install fan-module 1 epld bootflash:n7000-s1-epld.4.0.2.img

EPLD image file , built on Fri May 16 20:36:39 2008

EPLD                              Curr Ver    New Ver
--------------------------------------------------------
Fan Controller                    0.5         0.7
Fan Controller                    0.5         0.7
WARNING: Upgrade process could upto 30 minutes.
Module could be powered down and up.

Programming Fan Module 1 !!
Do you want to continue (y/n) ?  [n]
```

**Step 3**   Confirm the upgrade by entering Y for yes.

```
...
Do you want to continue (y/n) ?  [n] y
```

To confirm the EPLD upgrade, see the "Displaying EPLD Versions for a Fan Tray Module" section on page 6-38.

# Displaying the EPLD Versions

These topics describe how to display the EPLD versions on each module in your system and display the available EPLD versions:

- Displaying EPLD Versions for an I/O or Supervisor Module, page 6-37
- Displaying EPLD Versions for a Fabric Module, page 6-38
- Displaying EPLD Versions for a Fan Tray Module, page 6-38
- Displaying the Available EPLD Versions, page 6-38

## Displaying EPLD Versions for an I/O or Supervisor Module

To display all of the current EPLD versions on a specific I/O or supervisor module, use the **show version module** *slot_number* **epld** command as shown in Example 14.

**Example 14      Displaying the Current EPLD Versions for a Module**

```
switch# show version module 2 epld

EPLD Device                 Version
---------------------------------------
Power Manager                 4.2
IO                            1.10
Forwarding Engine             1.6
FE Bridge(1)                  186.2
FE Bridge(2)                  186.2
Linksec Engine(1)             1.2
Linksec Engine(2)             1.2
Linksec Engine(3)             1.2
Linksec Engine(4)             1.2
Linksec Engine(5)             1.2
Linksec Engine(6)             1.2
Linksec Engine(7)             1.2
Linksec Engine(8)             1.2
```

## Displaying EPLD Versions for a Fabric Module

To view all current EPLD versions on a fabric module, use the **show version xbar** *slot_number* **epld** command as shown in Example 15.

**Example 15      Displaying the Current EPLD Versions for a Fabric Module**

```
switch# show version xbar 1 epld

EPLD Device                 Version
---------------------------------------
Power Manager                 2.7
```

## Displaying EPLD Versions for a Fan Tray Module

To view all current EPLD versions on a specific fan tray, use the **show version fan** *slot_number* **epld** command as shown in Example 16.

**Example 16      Displaying Current EPLD Versions for Fan Tray 1**

```
switch# show version fan 1 epld
EPLD Device                 Version
---------------------------------------
Fan Controller(BUS A)         2.7
Fan Controller(BUS B)         2.7
```

## Displaying the Available EPLD Versions

To view the available EPLD versions, use the **show version epld** *url* command.

```
switch# show version epld bootflash:n7000-s1-epld.4.0.2.img

EPLD image file , built on Fri May 16 20:36:39 2008

Module Type                      EPLD Device       Version
------------------------------------------------------------
Supervisor-1X                    Power Manager        3.6
```

```
Supervisor-1X                   IO                      3.23
Supervisor-1X                   Inband                  1.7
Supervisor-1X                   Local Bus CPLD          2.1
Supervisor-1X                   CMP CPLD                6.0

10/100/1000 Mbps Eth Module     Power Manager           5.3
10/100/1000 Mbps Eth Module     IO                      2.10
10/100/1000 Mbps Eth Module     Forwarding Engine       1.6

10 Gbps Ethernet Module         Power Manager           4.4
10 Gbps Ethernet Module         IO                      1.10
10 Gbps Ethernet Module         Forwarding Engine       1.6
10 Gbps Ethernet Module         FE Bridge               186.3
10 Gbps Ethernet Module         Linksec Engine          1.7

Xbar                            Power Manager           2.8

Fan                             Fan Controller          0.7
Fan                             Fan Controller          0.7
```

# Default Settings

Table 6-12 lists the default hardware settings.

*Table 6-12      Default Hardware Parameters*

| Parameters | Default |
| --- | --- |
| Power supply mode | Power supply redundancy mode |

Send document comments to nexus7k-docfeedback@cisco.com

**CHAPTER 7**

# Troubleshooting

This chapter describes how to troubleshoot Cisco Nexus 7000 Series hardware problems.

This chapter includes the following sections:

If your system has problems related to the Cisco NX-OS operating system, see the *Cisco NX-OS Troubleshooting Guide, Release 4.0*. If you are unable to isolate a system problem, contact the Cisco Technical Assistance Center (TAC).

## Getting Started

Start the Cisco Nexus 7000 Series device by turning on the power at the power supply units to send power to the system fans, supervisor module, fabric modules, and I/O modules. During the startup phase, the STATUS LEDs on the supervisor and I/O modules are amber to indicate that the initialization process is in progress. When the system is operational, the component LEDs indicate that either the system is operational or you need to troubleshoot for system problems.

The key to troubleshooting the system is to isolate a problem to a specific system component. First, you compare what the system is doing with what it should be doing. Look at the chassis LEDs to see if there are any critical problems detected with the system components. Green chassis LEDs indicate that all components of a type are operational while amber LEDs indicate that at least one component of a type has a critical problem that requires troubleshooting.

For a listing of the system LEDs and the conditions that they indicate, see Table C-1 on page C-1.

Less critical problems, such as minor overtemperature conditions, are not indicated by the chassis LEDs. To find those problems, you must look for amber STATUS LEDs on the system modules.

Depending on the type of component that needs troubleshooting, see one of the following topics:

- For an amber PSU LED, see the "Troubleshooting the Power Supply" section on page 7-2.
- For an amber FAN LED, see the "Troubleshooting the Fan Trays" section on page 7-3.

- For an amber SUP LED, see the "Troubleshooting the Supervisor Modules" section on page 7-3.
- For an amber FAB LED, see the "Troubleshooting the Fabric Modules" section on page 7-4.
- For an amber IOM LED, see the "Troubleshooting the I/O Modules" section on page 7-5.

# Troubleshooting the Power Supply

The following conditions indicate that you need to troubleshoot one or more power supply units:

- The PSU LED on the chassis is amber.
- The Input 1, Input 2, or Output LED on a power supply unit is not green.
- The Fault LED on a power supply unit is flashing red.

Also, when there are power problems with other modules or the supervisor module PWR MGMT LED is amber, you need to troubleshoot the power supply units or check the seating of the modules that are not receiving power.

For a listing of the power supply unit LEDs and the conditions that they indicate, see Table C-5 on page C-5.

To troubleshoot a power supply problem, follow these steps:

**Step 1**    Determine which power supply unit has a problem. Check to see which power supply unit does not have its Input 1, Input 2, and Output LEDs lit.

> **Note**    If a power supply unit has only one power cord attached to an AC source, only the Input LED for the connected half of the power supply unit should be lit.

**Step 2**    If one of the required Input LEDs is not lit, perform each of the following checks on the power cord used for that half of the power supply unit:

- Make sure that the power cord is securely connected to the AC source.
- Make sure that the power cord is securely connected to the power supply unit. Verify that the cable retention device on the power supply unit is securely holding the power cord.
- Disconnect the power cord from the AC source and reconnect with another AC source.

**Step 3**    If the Output LED is not lit, verify that the power switch is turned to ON.

**Step 4**    Make sure that the power supply unit is properly seated in the power supply bay by performing the following steps:

a.    Turn the power switch to standby (STBY).

b.    Loosen the four captive screws on the power supply unit so that they are no longer in contact with the chassis.

c.    Pull the power supply unit part way out of the chassis and then push it back into the power supply bay. Make sure that the captive screws on the power supply unit align with their holes in the chassis.

d.    Tighten the four captive screws to 8 lb. in.

e.    Turn the power switch to ON.

**Step 5**    Verify that the power supply unit is functional by replacing it with another power supply (see the "Replacing a Power Supply Unit During Operations" section on page 8-1) and plugging its power cords into the same AC source. If the Input and Output LEDs turn green on the replacement power supply unit, contact Customer Service (see the "Contacting Customer Service" section on page 7-6) to replace the defective power supply unit.

If you are unable to determine the problem with the power supply or determine which power supply unit has the problem, contact TAC.

# Troubleshooting the Fan Trays

The following conditions indicate that there is a problem with one or more fan tray modules:

- The FAN LED on the chassis is amber.
- The STATUS LED on the fan tray is flashing red.

While the system is running, each fan tray module should be exhausting air and its STATUS LED should be green, which indicates that all of the fans in that tray are running above the threshold speed.

For a listing of the fan tray LEDs and the conditions that they indicate, see Table C-6 on page C-6.

To troubleshoot a fan tray problem, follow these steps until the problem is resolved:

**Step 1**    Check if the STATUS LED is flashing red or is not lit on each fan tray. If the LED is flashing red, at least one fan in the tray is running at a slow speed or not running. If the LED is not lit, no power is going to the fan tray.

**Step 2**    Check if the power supply units are providing power to the chassis components. See the "Troubleshooting the Power Supply" section on page 7-2.

**Step 3**    Make sure that the fan tray is properly seated in the chassis by following these steps:

   **a.**  Loosen the captive screws on the fan tray until they are no longer in the chassis.

   **b.**  Place one hand on the handle for the fan tray and pull the fan tray part way out of the chassis.

   **c.**  Push the fan tray back into the chassis until it is fully seated on the midplane and make sure that each captive screw on the fan tray is aligned with its hole in the chassis.

   **d.**  Securely tighten each captive screw (to 8 lb. in.) to the chassis.

**Step 4**    Call Customer Service and describe the conditions that you are seeing with the fan tray. See the "Contacting Customer Service" section on page 7-6.

# Troubleshooting the Supervisor Modules

The following conditions indicate a problem with one or more supervisor modules:

- The SUP LED on the chassis is amber.
- The STATUS LED on a supervisor module is amber, red, or not lit.
- The CMP STATUS LED on a supervisor module is amber or red.
- An ACT LED on a supervisor module is not lit.

The SYSTEM and PWR MGMT LEDs on the supervisor modules indicate that there could be problems with the supervisor module or any of the other device modules.

When you start up the device, the supervisor module STATUS and CMP STATUS LEDs are amber while the module runs diagnostic tests. When the module passes the diagnostic tests and becomes operational, the STATUS and CMP STATUS LEDs become green. For devices that have two supervisor modules, the ACTIVE LED is green for the active supervisor module or amber for the standby supervisor module. When the SYSTEM and PWR MGMT LEDs are green, the device does not detect any critical system problems. Amber, red, or unlit LEDs indicate system problems that you need to resolve, possibly with other system modules.

For a listing of supervisor module LEDs and the conditions that they indicate, see Table C-2 on page C-2.

To troubleshoot for a hardware problem with the supervisor module, follow these steps until the problem is resolved:

**Step 1** Check if the STATUS or CMP STATUS LED is amber, red, or unlit on each supervisor module as follows:

- If either the STATUS or CMP STATUS LED is amber or flashing red, a minor (amber) or critical (flashing red) overtemperature condition exists. Contact TAC for assistance (see the "Contacting Customer Service" section on page 7-6).
- If the STATUS LED is red, the initialization process detected a parity error condition. Contact TAC for assistance (see the "Contacting Customer Service" section on page 7-6).

**Step 2** If the STATUS and CMP STATUS LEDs are unlit, check the module seating and power connections as follows:

**a.** Loosen the captive screws on the module so that they are no longer in contact with the chassis.

**b.** Unseat the module by pressing the ejector buttons on each end of the module and swinging out each ejector lever.

**c.** Place one hand on the handle for the module and pull the module part way out of the chassis.

**d.** Push the module back into the chassis until it is seated on the midplane.

**e.** Rotate both ejector levers until they both touch the front of the module. Make sure that each captive screw on the fan tray is aligned with its hole in the chassis.

**f.** Securely tighten each captive screw (to 69 N m [8 in-lbs]) to the chassis.

**g.** Verify that the Output LED on each power supply is lit. If the Output LED is not lit, troubleshoot the power supply unit (see the "Troubleshooting the Power Supply" section on page 7-2).

**Step 3** If the PCMCIA LED is not lit, the compact flash slot is empty. If you need to load a compact flash card in the slot, make sure that the compact flash card is formatted correctly for the slot.

**Step 4** Contact TAC for assistance (see the "Contacting Customer Service" section on page 7-6).

# Troubleshooting the Fabric Modules

The following conditions indicate problems with one or more fabric modules:

- The FAB LED on the chassis is amber.
- The STATUS LED on the fabric module is red.

When you start up the device or install a new fabric module, the STATUS LED on the module is amber while the module initializes. When the module becomes operational, the STATUS LED becomes green. If an overtemperature condition occurs, the STATUS LED flashes red.

For a listing of the fabric module LEDs and the conditions that they indicate, see Table C-4 on page C-5.

To troubleshoot a fabric module hardware problem, follow these steps until the problem is resolved:

**Step 1**    Check if a STATUS LED is flashing red or is is unlit on each fabric module.

**Step 2**    Check if the power supply units are providing power to the chassis components. See the "Troubleshooting the Power Supply" section on page 7-2.

**Step 3**    Make sure that the fabric module is properly seated in the chassis as follows:

   **a.** Loosen the captive screws on the fabric module until they are no longer in the chassis.

   **b.** Press the eject buttons on either end of the module and simultaneously rotate out both ejector levers until the module is unseated from the midplane.

   **c.** Place one hand on the module handle and pull the module part way out of the chassis.

   **d.** Push the module back into the chassis until it is seated on the midplane.

   **e.** Simultaneously rotate both ejector levers until they both touch the front of the module. This action fully seats the module on the midplane.

   **f.** Make sure that each of the captive screws on the module is aligned with its holes in the chassis.

   **g.** Screw in each captive screw to the chassis and tighten to 69 N m (8 in-lbs).

**Step 4**    Contact TAC for assistance (see the "Contacting Customer Service" section on page 7-6).

# Troubleshooting the I/O Modules

The following conditions indicate that there are problems with one or more I/O modules:

- The IOM LED on the chassis is amber.
- The STATUS LED on an I/O module is red.

During initialization, the STATUS LED is amber while the I/O module powers up and performs diagnostic tests. When the diagnostic tests are complete, the STATUS LED becomes green. If an overtemperature condition occurs, the STATUS LED becomes amber. If the module is resetting, ejectors are out, or there is a major overtemperature condition, the LED flashes red.

For a listing of the I/O module LEDs and the conditions that they indicate, see Table C-3 on page C-3.

To troubleshoot an I/O module hardware problem, follow these steps until the problem is resolved:

**Step 1**    Determine which I/O module has a problem. Check if a STATUS LED that is flashing red or is not lit on a module.

**Step 2**    Check if the power supply units are providing power to the chassis components. See the "Troubleshooting the Power Supply" section on page 7-2.

**Step 3**    Make sure that the I/O module is properly seated in the chassis by following these steps:

   **a.** Loosen the captive screws on the I/O module until they are no longer in the chassis.

   **b.** Press the eject buttons on either end of the module.

   **c.** Simultaneously rotate out both ejector levers until the module is unseated from the midplane.

**d.** Place one hand on the module handle and pull the module part way out of the chassis.

**e.** Push the module back into the chassis until it is seated on the midplane.

**f.** Simultaneously rotate both ejector levers to the front of the module to fully seat the module.

**g.** Make sure that each of the captive screws on the module is aligned with its holes in the chassis.

**h.** Securely tighten each captive screw (to 8 in-lb) to the chassis.

**Step 4** Contact TAC for assistance (see the ).

# Contacting Customer Service

If you are unable to solve a startup problem after using the troubleshooting suggestions in this chapter, contact a customer service representative at the Technical Assistance Center (TAC) for assistance and additional instructions. Before you call, have the following information ready to help your service provider assist you as quickly as possible:

- Date that you received the device
- Chassis serial number (located on a label on the right of the rear panel of the chassis)
- Type of software and release number
- Maintenance agreement or warranty information
- Brief description of the problem
- Brief explanation of the steps that you have already taken to isolate and resolve the problem

**Note** If you have CLI access, enter the **show sprom all** command to display the backplane contents.

To contact TAC, go to http://www.cisco.com/warp/public/687/Directory/DirTAC.shtm and click Support.

**C H A P T E R 8**

# Removal and Installation Procedures

This chapter describes the removal and installation procedures for hte Cisco Nexus 7000 Series devices.

A Nexus 7000 Series device is designed for redundancy, which means that you can replace its modules, fan trays, and power supply units if there is at least one other of the same type operating during the replacement process. This chapter explains how to replace those components and the optional external components (front door frame and air filter).

This chapter includes the following sections:

## Replacing a Power Supply Unit During Operations

The Cisco Nexus 7000 Series devices use a load-balanced power supply that uses up to three or four power supply units that each convert up to 1.2 kW, 3 kW, 3.5 kW, 6 kW, or 7.5 kW of AC power to DC power for system operations. If you can set one power supply unit in standby mode and have the required power load balanced by the remaining online power supply units, you can replace the standby power supply unit with another power supply unit without interrupting system operations.

**Warning** **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

> **Note**  If a replacement power supply unit is not available and you do not have a blank plate to cover the empty power supply bay, you should leave the original power supply in the bay until you have the replacement unit.

For information on removing and installing redundant power supply units, see the following topics:

- Removing a Power Supply Unit During Operations, page 8-2
- Installing a Power Supply Unit During Operations, page 8-2

## Removing a Power Supply Unit During Operations

> **Warning**  **Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.** Statement 1034

To replace a power supply unit while a Cisco Nexus 7000 Series device is operating, follow these steps:

**Step 1**  Make sure that the power supply units not being replaced have their power switches turned to ON.

**Step 2**  Turn the power switch on the power supply that you are removing to standby (STBY).

The Input 1 and Input 2 LEDs turn off.

> **Note**  If the power supply has only one AC power cord attached to it, only the LED for that input line turns off (the other one is already off).

**Step 3**  Unplug the AC power cords from the AC power source. If the power supply has only one AC power cable, unplug just that cable. Otherwise, unplug both AC power cables.

**Step 4**  Unscrew the four captive screws on the power supply unit until each screw is no longer in contact with the chassis.

**Step 5**  Grasp the power supply handle with one hand and slide the power supply part of the way out of the chassis. Place your other hand underneath the power supply and slide the power supply completely out of the chassis.

**Step 6**  Place the power supply on an antistatic mat or antistatic foam.

**Step 7**  Either replace the power supply unit or cover the empty power supply bay as follows:

- If you are ready to replace the power supply, see the Installing a Power Supply Unit During Operations, page 8-2.
- If the power supply bay is to remain empty, install a blank power supply filler plate (Cisco part number 800-28658-01) over the opening, and secure it with the captive screws.

## Installing a Power Supply Unit During Operations

After you remove a power supply, you can replace it with another power supply or replace it with a blank plate until another power supply is available.

⚠

**Warning**    **Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.** Statement 1034

To install a power supply unit while a Cisco Nexus 7000 Series device is operating, follow these steps:

**Step 1**    Ensure that the power switch on the power supply unit is in the standby (STBY) position and that the AC power cords are not plugged into the AC power supply.

**Step 2**    If the power cords are not already attached to the power supply unit, plug the power cables into the power jacks on the front of the power supply unit and tighten the cable retention devices for each cable. Depending on the amount of power consumed by the power supply unit, you need to attach one or two power cords.

✎

**Note**    The 6-kW power supply unit does not ship with power cables attached to it, so you must attach one or two of those cables. If necessary, you can remove the cables from the power supply unit that you removed. The 7.5-kW power supply ships with permanently attached power cables, so you do not need to attach power cables to that power supply unit.

**Step 3**    Grasp the power supply unit handle with one hand, and place your other hand underneath the power supply unit to support its weight. Align the back of the power supply unit with the power supply bay and slide the power supply into the power supply bay. Make sure the power supply unit is fully seated in the power supply bay and that its four captive screws are aligned with their holes in the chassis.

✎

**Note**    The 6-kW power supply unit weighs 22 pounds (10 kg), and the 7.5-kW power supply unit weighs 26.4 pounds (12 kg). Use two hands to safely hold and move a power supply unit.

**Step 4**    Screw in and tighten the four captive screws so the power supply unit is secured to the device chassis.

**Step 5**    Plug the power cables that are already attached to the power supply unit into the AC power source.

🔎

**Tip**    For power redundancy, plug each power cable into a separate AC power supply circuit.

**Step 6**    Turn the Power switch from STBY to ON.

**Step 7**    Verify the power supply operation by checking that the power supply LEDs are in the following states:

- Input 1 LED is green.
- If a second AC power cord was connected, the Input 2 LED is green.
- Output LED is green.
- Fault LED is not on or blinking.

If one or more of these LEDs is red, turn the power switch to standby (STBY), check the AC power connections for the line in standby (STDBY), and then turn the power switch back to ON. The LEDs for the connected power supply units should be green.

For more information on the power supply unit LED states, see Table C-5 on page C-5.

# Replacing a Supervisor Module

The Cisco Nexus 7000 Series devices can be configured with one or two supervisor modules. If the system has two supervisor modules, you can replace one of the supervisors while the other one manages system operations. If the system has only one supervisor, you must bring the system down to replace the supervisor module because the supervisor module is required for managing operations.

For instructions on replacing these supervisor modules, see the following sections:

## Required Tools

You need a flat-blade or number 2 Phillips-head screwdriver to loosen or tighten the captive screws on the supervisor module.

## Replacing One of Two Supervisor Modules During System Operations

During operations, one supervisor is active while the other supervisor is in standby mode. You can replace either of these two supervisors. If you need to replace the active supervisor, it becomes the standby supervisor as soon as you press its ejector buttons.

⚠️
**Caution**    If you cannot immediately replace a supervisor, either leave the supervisor in its slot until it can be replaced or replace it with a blank module so the system airflow is not disrupted. If the system airflow is disrupted for more than a couple of minutes, the system could overheat and shut down.

⚠️
**Warning**    **Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.** Statement 1034

⚠️
**Caution**    Handle each supervisor or I/O module carefully using an ESD wrist strap, holding the module only on its carrier edges without touching any electronic circuitry, and placing the module on antistatic mats or antistatic foam when it is not installed in the Cisco Nexus 7000 Series chassis.

To replace a supervisor module, follow these steps:

**Step 1**    Place an antistatic mat or antistatic foam where you can place the new and old supervisor modules.

**Step 2**    Place the replacement supervisor module on the antistatic mat or antistatic foam.

**Step 3**    Loosen the two captive screws identified in View A of Figure 8-1.

*Figure 8-1    Unseating a Supervisor Module*
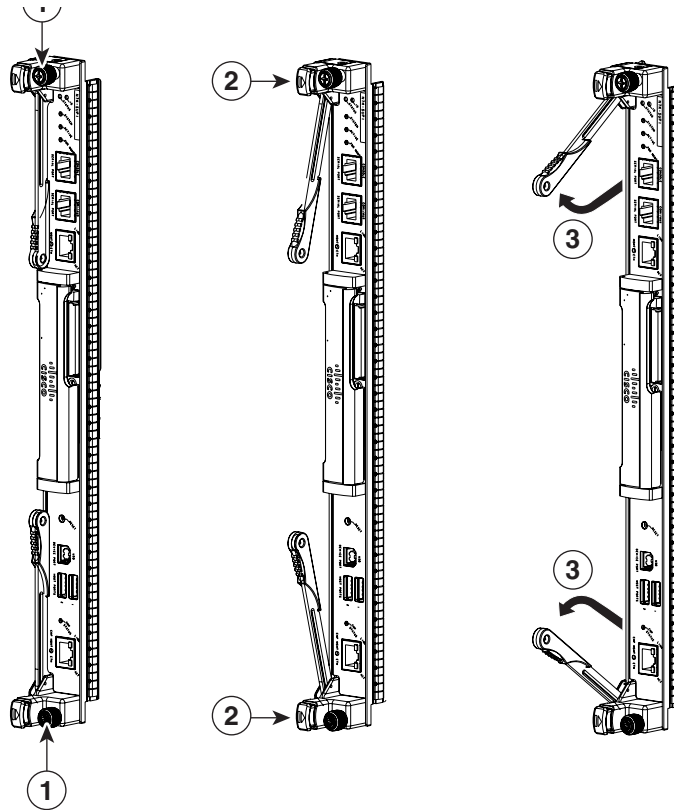


| **1** | Unscrew two captive screws. | **2** | Simultaneously press both ejector buttons. |
|---|---|---|---|
| **3** | Simultaneously swing open both ejector levers to unseat the module. | | |

**Step 4**  Press the ejector release buttons on the top and bottom ends of the module (see View B of Figure 8-1) to push out the ejector levers and to disconnect the module.

If the chassis has two supervisor modules and you disconnect the active supervisor module, that supervisor goes into standby mode and the other supervisor automatically becomes the active supervisor.

**Step 5**  Disconnect all of the cables attached to the front of the module to be removed. Make sure that each cable is labelled for its port on the module.

**Step 6**  Simultaneously rotate the two ejector levers outward to unseat the module from the midplane connector (see View C of Figure 8-1.

**Step 7**  With a hand on each ejector, pull the module part way out of its slot in the chassis.

**Step 8**  Grasp the front edge of the module with your left hand and place your right hand under the lower side of the module to support its weight. Pull the module out of its slot.

⚠

**Caution**    To prevent ESD damage, avoid touching the electronic circuitry and prevent anything else from coming in contact with the circuitry.

**Step 9** If you are removing the module from a Cisco Nexus 7010 chassis, rotate the module 90 degrees counterclockwise so that it is horizontal and you can see its circuitry from above.

**Step 10** Place the removed module on the antistatic mat or antistatic foam.

**Step 11** If the replacement supervisor is in a shipping box, prepare the module for installation by following these steps:

   **a.** Open the shipping box for the module and remove the module from its antistatic wrapping.

   **b.** If the plastic protector shown in Figure 8-2 is included with the module, remove it by pulling it past the back of the module. Keep the plastic protector and the other packing materials so that you can easily ship the module at a later time.

*Figure 8-2*     *Removing the Plastic Protector from the Supervisor Module*
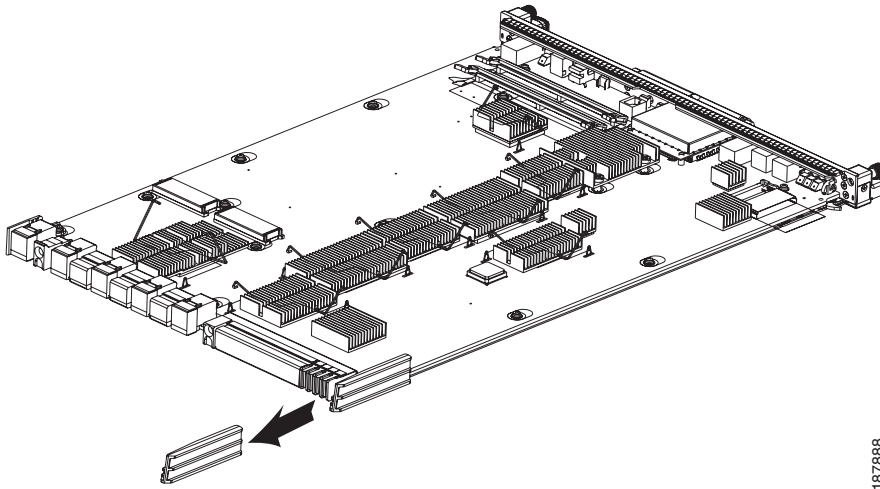


⚠ **Caution** To prevent ESD damage, avoid touching the electronic circuitry and prevent anything else from coming in contact with the circuitry.

**Step 12** On the replacement module, rotate both of the ejector levers away from the front of the module.

**Step 13** If you are inserting the module into a Cisco Nexus 7010 chassis, rotate the module 90 degrees clockwise.

**Step 14** Align the module to the chassis guides for the vacated slot (slot 5 or 6 on the Cisco Nexus 7010 chassis or slot 9 or 10 on the Cisco Nexus 7018 chassis), and slide the module part way into the slot.

**Step 15** With one or both hands on the front of the module, push the module all the way into the slot until it seats on the midplane connector.

**Step 16** Simultaneously push both ejector levers inward until they come in contact with the face of the module.

The module should be fully seated in the slot and the captive screws should be aligned with their holes in the chassis. If there is another module to the right of the one that you are installing, the EMI gasket should close the gap between the modules.

**Step 17** Screw in the two captive screws to the chassis and tighten them to 69 N m (8 in-lbs).

**Step 18** Reconnect the console cable to the CONSOLE SERIAL PORT as explained in the "Connecting to the Console" section on page 5-2.

**Step 19**   If the previous supervisor module was connected to an asynchronous device through a modem, connect the modem cable to the COM1/AUX SERIAL PORT as explained in the "Connecting to the Console" section on page 5-2.

**Step 20**   Reconnect the network management cable to the MGMT ETH port as explained in "Setting Up the Management Interface" section on page 5-4.

**Step 21**   Reconnect the CMP cable to the CMP MGMT ETH port as explained in "Connecting the Supervisor CMP Port" section on page 5-5.

# Replacing a Supervisor Module in a Single-Supervisor System

If you need to replace the supervisor in a single-supervisor Cisco Nexus 7000 Series system, you must shut down the system before replacing the supervisor.

⚠ **Warning**   **Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing. Statement 1034**

⚠ **Caution**   Handle the supervisor module carefully using an ESD wrist strap, holding the module only on its carrier edges without touching any electronic circuitry, and placing the module on antistatic mats or antistatic foam when it is not installed in the Cisco Nexus 7000 Series chassis.

To replace a supervisor module in a single-supervisor system, do the following:

**Step 1**   Place an antistatic mat or antistatic foam where you can place the new and old supervisor modules.

**Step 2**   Place the replacement supervisor module on the antistatic mat or antistatic foam.

**Step 3**   Turn off the power on each of the power supply unit by turning its power switch to standby (STBY).

**Step 4**   Disconnect all of the cables attached to the front of the module to be removed.

**Step 5**   Loosen the two captive screws identified in View A of Figure 8-1.

**Step 6**   Press the ejector release buttons on the top and bottom ends of the module (see View B of Figure 8-1) to push out the ejector levers and to disconnect the module.

**Step 7**   Simultaneously rotate the two ejector levers outward to unseat the module from the midplane connector (see View C of Figure 8-1.

**Step 8**   With a hand on each ejector, pull the module part way out of its slot in the chassis.

**Step 9**   Grasp the front edge of the module with your left hand and place your right hand under the lower side of the module to support its weight. Pull the module out of its slot.

⚠ **Caution**   To prevent ESD damage, avoid touching the electronic circuitry and prevent anything else from coming in contact with the circuitry.

**Step 10**   If you are removing a module from a Cisco Nexus 7010 chassis, rotate the module 90 degrees counterclockwise so that it is horizontal and you can see its circuitry from above.

**Step 11**   Place the removed module on the antistatic mat or antistatic foam.

**Step 12** On the replacement supervisor module, rotate both of the ejector levers away from the front of the module.

⚠

**Caution** To prevent ESD damage, avoid touching the electronic circuitry and prevent anything else from coming in contact with the circuitry.

**Step 13** If you are inserting the module into a Cisco Nexus 7010 chassis, rotate the module 90 degrees clockwise.

**Step 14** Align the module to the chassis guides for the vacated slot (slot 5 or 6 on a Cisco Nexus 7010 chassis or slot 9 or 10 on a Cisco Nexus 7018 chassis), and slide the module part way into the slot.

**Step 15** With one or both hands on the front of the module, push the module all the way into the slot until it seats on the midplane connector.

**Step 16** Slide the module into the slot until it seats on the midplane.

**Step 17** Simultaneously push both ejector levers inward until they come in contact with the face of the module.

The module should be fully seated in the slot and the captive screws should be aligned with their holes in the chassis. If there is another module to the right of the one that you are installing, the EMI gasket should close the gap between the modules.

**Step 18** Screw in the two captive screws to the chassis and tighten them to 69 N m (8 in-lbs).

**Step 19** Reconnect the console cable to the CONSOLE SERIAL PORT as explained in the "Connecting to the Console" section on page 5-2.

**Step 20** If the previous supervisor module was connected to an asynchronous device through a modem, connect the modem cable to the COM1/AUX SERIAL PORT as explained in the "Connecting to the Console" section on page 5-2.

**Step 21** Reconnect the network management cable to the MGMT ETH port as explained in "Setting Up the Management Interface" section on page 5-4.

**Step 22** Reconnect the CMP cable to the CMP MGMT ETH port as explained in "Connecting the Supervisor CMP Port" section on page 5-5.

# Replacing an I/O Module

The Cisco Nexus 7010 device has up to eight I/O modules, and a Cisco Nexus 7018 has up to 16 I/O modules. These modules are located on the front of the chassis. You can replace one of these modules at a time while the device is operating.

For instructions on replacing these I/O modules, see the following sections:

- Required Tools, page 8-8
- Replacing an I/O Module, page 8-9

# Required Tools

You need a flat-blade or number 2 Phillips-head screwdriver to loosen or tighten the captive screws on the I/O module.

# Replacing an I/O Module

A Cisco Nexus 7000 Series device includes one or more of the following types of I/O modules:

- 48-port 10/100/1000 Ethernet module
- 48-port 1 Gigabit Ethernet SFP module
- 32-port 10 Gigabit Ethernet SFP+ module

You can replace each of these I/O modules with another module of the same type while the Cisco Nexus 7000 Series device is operational.To do this, you must first remove an I/O module from the chassis, then install a new or replacement I/O module in the newly vacated slot within a couple of minutes to maintain the designed airflow.

⚠ **Warning**    **Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.** Statement 1034

⚠ **Caution**    Make sure that you wear an ESD wrist strap while you handle each I/O module. Hold the module only on its carrier edges without touching any electronic circuitry, and place it on antistatic mats or antistatic foam when it is not installed in the chassis.

⚠ **Caution**    If you cannot immediately replace an I/O module, either leave the I/O module in its slot or replace it with a blank module so the system airflow is not disrupted. Leaving an I/O module slot open for more than a couple of minutes can disrupt the system airflow causing the system to overheat and shutdown.

To replace an I/O module, follow these steps:

**Step 1**    Place antistatic mats or antistatic foam where you can place the old and new I/O modules. Choose a place that prevents damage to the module while it is outside the chassis.

**Step 2**    Place the replacement I/O module on an antistatic mat or antistatic foam.

**Step 3**    Disconnect each I/O cable from the front of the module by doing the following:

- For the 48-port 10/100/1000 Ethernet module, unplug each cable.
- For the 48-port 1-Gigabit Ethernet module, remove the fiber-optic cables then remove the SFP transceivers.
- For the 32-port 10-Gigabit Ethernet module, remove the fiber-optic cables then remove the SFP+ transceivers.

✎ **Note**    To prevent contaminants from entering the fiber optic lines or transceivers, cover the fiber-optic openings with a plug.

⚠ **Warning**    **Invisible laser radiation may be omitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.** Statement 1051

**Step 4**    Loosen the two captive screws identified in View A of Figure 8-3.

*Figure 8-3    Unseating an I/O Module*
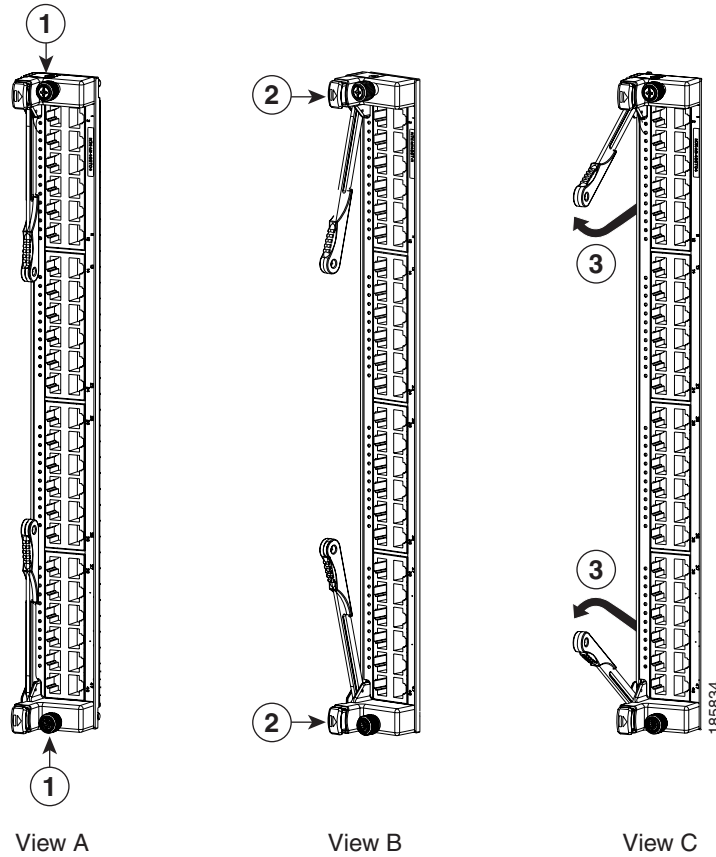


View A                    View B                    View C

| 1 | Unscrew two captive screws. | 2 | Simultaneously press both ejector buttons. |
|---|---|---|---|
| 3 | Simultaneously swing open both ejector levers to unseat the module. | | |

**Step 5**    Press ejector release buttons on the top and bottom ends of the module (see View B in Figure 8-3) to push out the ejector levers and to disconnect the module.

**Step 6**    Simultaneously rotate the two ejector levers outward to unseat the module from the midplane connector (see View C in Figure 8-3).

**Step 7**    With a hand on each ejector, pull the module part way out of its slot in the chassis.

**Step 8**    With your left hand on the top side and your right hand on the bottom side, pull the module out of the slot.

⚠ **Caution**    To prevent ESD damage, avoid touching the electronic circuitry and prevent anything else from coming in contact with the circuitry.

**Step 9**    If you are removing the module from a Cisco Nexus 7010 chassis, rotate the module 90 degrees counterclockwise so that it is horizontal (with the circuitry seen from above).

**Step 10**    Place the module on an antistatic mat or antistatic foam.

**Step 11**    On the replacement I/O module, rotate both ejector levers fully away from the front of the module.

**Step 12**    If you are inserting the module into a Cisco Nexus 7010 chassis, rotate the module 90 degrees clockwise.

**Step 13**    Align the module to the chassis guides for the vacated slot, and slide the module part way into the slot.

**Step 14**    With one or both hands on the front of the module, push the module all the way into the slot until it seats on the midplane connector.

**Step 15**    Simultaneously push both ejector levers inward until they come in contact with the face of the module.

**Note**    Verify that the ejector levers are fully closed before tightening the captive screws. Failure to fully seat the module in the backplane connector can result in error messages.

**Step 16**    Tighten the two captive screws on the I/O module to 69 N m (8 in-lbs).

**Step 17**    Reconnect the I/O cables to the ports or the transceivers on the fiber-optic cables to the ports on the module.

# Replacing a Fabric Module During System Operations

The Cisco Nexus 7000 Series devices have three to five fabric modules located on the backside of the chassis. You can replace one of these fabric modules at a time while the device is operating.

For instructions on replacing these fabric modules, see the following sections:

## Required Tools

You need a flat-blade or number 2 Phillips-head screwdriver to loosen or tighten the captive screws on the fan tray.

## Replacing a Fabric Module

You should replace a fabric module with another fabric module within a couple minutes to maintain the designed system airflow. If you cannot replace the fabric module, you must fill the slot with a blank module.

**Warning**    **Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.** Statement 1034

⚠

**Caution** Make sure that you wear an ESD wrist strap while you handle each I/O module. Hold the module only on its carrier edges without touching any electronic circuitry, and place it on antistatic mats or antistatic foam when it is not installed in the chassis.

To replace a fabric module, follow these steps:

**Step 1** Place an antistatic mat or antistatic foam where you can place the fabric modules. Choose a place that prevents damage to the module while it is outside the chassis.

**Step 2** Place the replacement fabric module on the antistatic mat or antistatic foam.

**Step 3** Loosen the two captive screws on the module that you are removing (see View A in Figure 8-4).

*Figure 8-4        Unseating a Fabric Module*
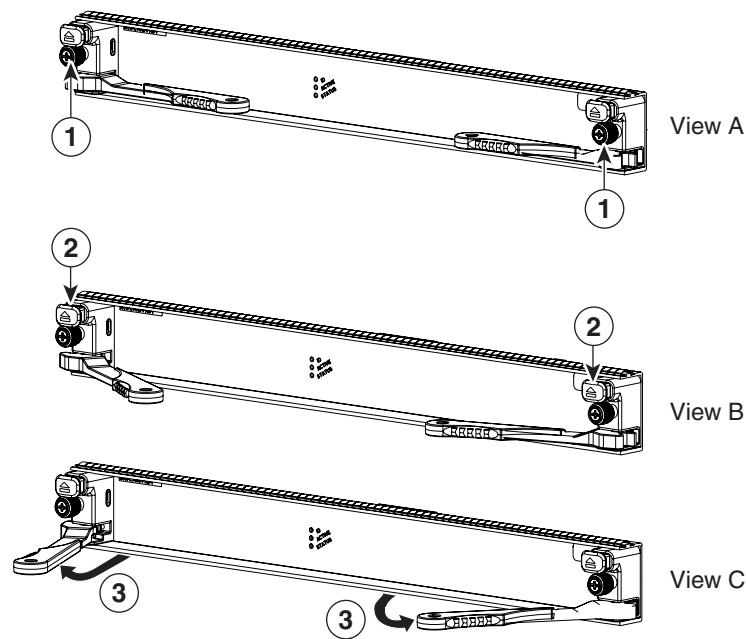


**Step 4** Press both ejector release buttons to release the ejector levers (see View B in Figure 8-4).

**Step 5** Simultaneously rotate both ejectors away from the face of the module to unseat the module from the midplane connector (see View C in Figure 8-4).

**Step 6** Holding each ejector lever, pull the module part way out of its slot.

**Step 7** Grasp the front edge of the module and place your other hand under the module to support its weight. Pull the module out of its slot. Do not touch the module circuitry.

**Step 8** If you are removing the module from a Cisco Nexus 7018 chassis. turn the module counterclockwise so that it is horizontal.

**Step 9** Place the module on the antistatic mat or antistatic foam.

**Step 10** On the replacement module, rotate the two ejector levers fully away from the face of the module.

**Step 11** If you are inserting the module into a Cisco Nexus 7018 chassis, turn the module 90 degrees clockwise.

**Step 12** With one hand holding each side of the module, align the backside of the module to the slot guides in the vacated slot, and slide the module part way into the slot.

⚠️

**Caution** To prevent ESD damage, avoid touching the electronic circuitry and prevent anything else from coming in contact with the circuitry.

**Step 13** With one or both hands on the face of the module, push the module all the way into the slot until it seats on the midplane connector. The EMI gasket will close the gap between this module and any module or chassis edge that is immediately above the module that you just installed.

**Step 14** Simultaneously push both ejector levers inward until they come in contact with the face of the module. The captive screws should be aligned to their holes in the chassis.

**Step 15** Tighten the two captive screws on the fabric module to 69 N m (8 in-lb).

# Replacing a Cisco Nexus 7010 System Fan Tray During System Operations

The Cisco Nexus 7010 system has two system fan trays located on the upper backside of the chassis (see Figure 1-3 on page 1-4).

⚠️

**Warning** **Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.** Statement 1034

For instructions on replacing these fan trays, see the following sections:

- Required Tools, page 8-13
- Replacing a Cisco Nexus 7010 System Fan Tray, page 8-13

## Required Tools

You need a flat-blade or number 2 Phillips-head screwdriver to loosen or tighten the captive screws on the fan tray.

## Replacing a Cisco Nexus 7010 System Fan Tray

The Cisco Nexus 7010 system fan tray is designed to be removed and replaced while the system is operating, but you should replace the fan tray within a couple of minutes to maintain the designed system airflow.

⚠️

**Warning** **When removing the fan tray, keep your hands and fingers away from the spinning fan blades. Let the fan blades completely stop before you remove the fan tray.** Statement 258

To replace a Cisco Nexus 7010 system fan tray, follow these steps:

**Step 1**   Place an antistatic mat or antistatic foam where you can place the fan trays.

Choose a place that prevents damage to the module while it is outside the chassis.

**Step 2**   Place the replacement fan tray on the antistatic mat or antistatic foam.

**Step 3**   Loosen the two captive screws on the fan tray that you are replacing by turning them counterclockwise until they are free of the chassis.

**Step 4**   Grasp the fan assembly with both hands, and pull it outward. If the fan tray power connector does not easily unseat from the backplane, rock it gently.

**Step 5**   Pull the fan assembly clear of the chassis, and place it on an antistatic mat or antistatic foam.

**Step 6**   Hold the replacement fan tray so that the fans are on top and the fan status LED is on the right.

**Step 7**   Place the replacement fan tray into the open slot for a system fan tray. When it is aligned with the left and right chassis guides for the fan tray, push the fan module into the chassis until the power connector seats in the backplane and the captive screws are aligned to their holes in the chassis.

**Step 8**   Tighten the captive screws to 8 in-lb.

# Replacing a Cisco Nexus 7010 Fabric Fan Tray

The Cisco Nexus 7010 system has two fabric fan trays located on the backside of the chassis immediately above the fabric modules (see Figure 1-3 on page 1-4).

⚠

**Warning**   **Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing. Statement 1034**

For instructions on replacing these fan trays, see the following sections:

- Required Tools, page 8-13
- Replacing a Cisco Nexus 7010 System Fan Tray, page 8-13

## Required Tools

You need a flat-blade or number 2 Phillips-head screwdriver to loosen or tighten the captive screws on the fabric fan tray.

## Replacing a Cisco Nexus 7010 Fabric Fan Tray

The Cisco Nexus 7010 fabric fan tray is designed to be removed and replaced while the system is operating without presenting damaging the system. It is best to replace the fan tray within a couple of minutes to maintain the designed airflow.

⚠

**Warning**   **When removing the fan tray, keep your hands and fingers away from the spinning fan blades. Let the fan blades completely stop before you remove the fan tray.** Statement 258

To replace a Cisco Nexus 7010 fabric fan tray, follow these steps:

**Step 1**    Place an antistatic mat or antistatic foam where you can place the fan trays.

Choose a place that prevents damage to the module while it is outside the chassis.

**Step 2**    Place the replacement fan tray on the antistatic mat or antistatic foam.

**Step 3**    Loosen the two captive screws on the fabric fan tray that you are replacing by turning them counterclockwise until they are free of the chassis.

**Step 4**    Grasp the fan assembly handle with one hand, pull the fan tray out of its slot on the chassis, and place the fan tray on an antistatic pad or antistatic foam.

If the fan tray power connector does not easily unseat from the backplane, rock it gently.

**Step 5**    Grasp the handle for the replacement fan tray in one hand and orient it so that the side with two captive screws is on the left. Place your other hand under the fan tray to support its weight.

**Step 6**    Align the fan tray to the open fabric fan tray slot. When it is aligned with the left and right chassis guides for the fan module, push the fan module into the chassis until the power connector seats in the backplane and the captive screws are aligned to their holes in the chassis.

**Step 7**    Tighten the captive screws to 8 in-lb.

# Replacing a CompactFlash Card

You can replace a CompactFlash card in either flash memory reader on any supervisor module. The replacement card must already be formatted for the reader or you must reformat the card after installing it.

> **Note**    The LOG FLASH and EXPANSION FLASH readers require different formats for their cards.

To replace a CompactFlash card, follow these steps:

**Step 1**    Press the Eject Request button for the reader that has the card to be replaced.

**Step 2**    Wait for the reader LED to turn off.

- If you are removing a log flash card, you will see the following message:

```
switch# 2008 Mar 15 10:00:00 switch %$ VDC-1 %$ %IDEHSD-2-UMOUNT:logflash:offline
```

- If you are removing an expansion flash card, you will see the following message:

```
switch# 2008 Mar 15 10:00:00 switch %$ VDC-1 %$ %IDEHSD-2-UMOUNT:slot0:offline
```

**Step 3**    Press the Eject button next to the reader.

The reader ejects the card part way out of the slot.

**Step 4**    Remove the card from the reader.

**Step 5**    Align the replacement card to the CompactFlash reader slot as shown in Figure 2-10 on page 2-17. The grooves on the thin side of the card must begin on the end of the card that goes into the reader first.

**Step 6**    Push the card all the way into the reader.

If the card does not fit easily into the slot, flip the card so the bottom edge is on top, and try pushing the card into the slot.

**Step 7** Wait for the reader LED to turn green and for a message to appear on the console.

- If you are installing a card into the log flash reader, the message will end with "logflash:online."

```
switch# 2008 Mar 15 08:00:00 switch %$ VDC-1 %$ %IDEHSD-2-MOUNT: logflash:online
```

- If you are installing a card into the expansion flash reader, the message will end with "slot0:online."

```
switch# 2008 Mar 15 08:00:00 switch %$ VDC-1 %$ %IDEHSD-2-MOUNT: slot0:online
```

- If you see an offline message or do not see a message, either the card is not fully pushed into the reader or it is improperly formatted.

```
switch# 2008 Dec 1 12:00:00 switch %$ VDC-1 %$ %IDEHSD-2-UMOUNT:logflash:offline
```

Make sure that the card is fully inserted inside the reader. If the card is fully inserted, either format the card (see the *Cisco NX-OS Fundamentals Configuration Guide, Release 4.0*) or replace the card with another card that is properly formatted for the reader.

**Step 8** Remove the bottom frame assembly by completely unscrewing the four screws identified in Figure 8-5.

*Figure 8-5        Removing the Bottom Frame*
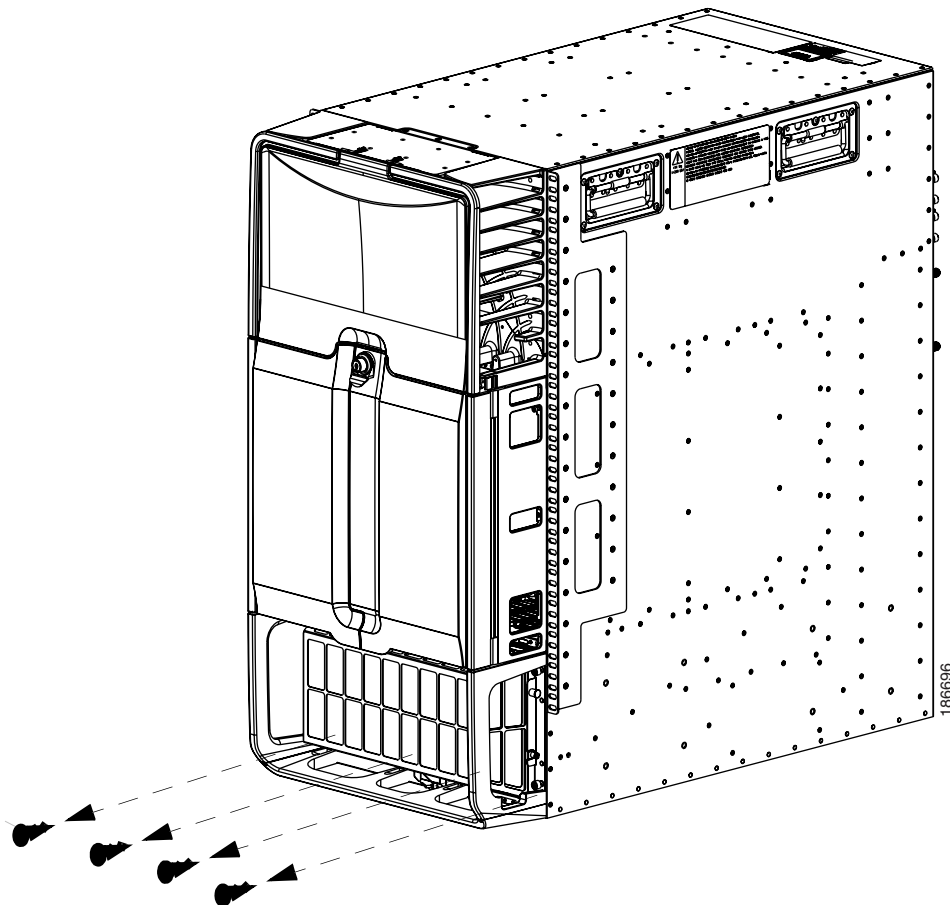


**Step 9** Remove the front doors on the middle of the frame by unscrewing the six screws (three on each side) identified in Figure 8-6.

*Figure 8-6        Removing the Front Doors*
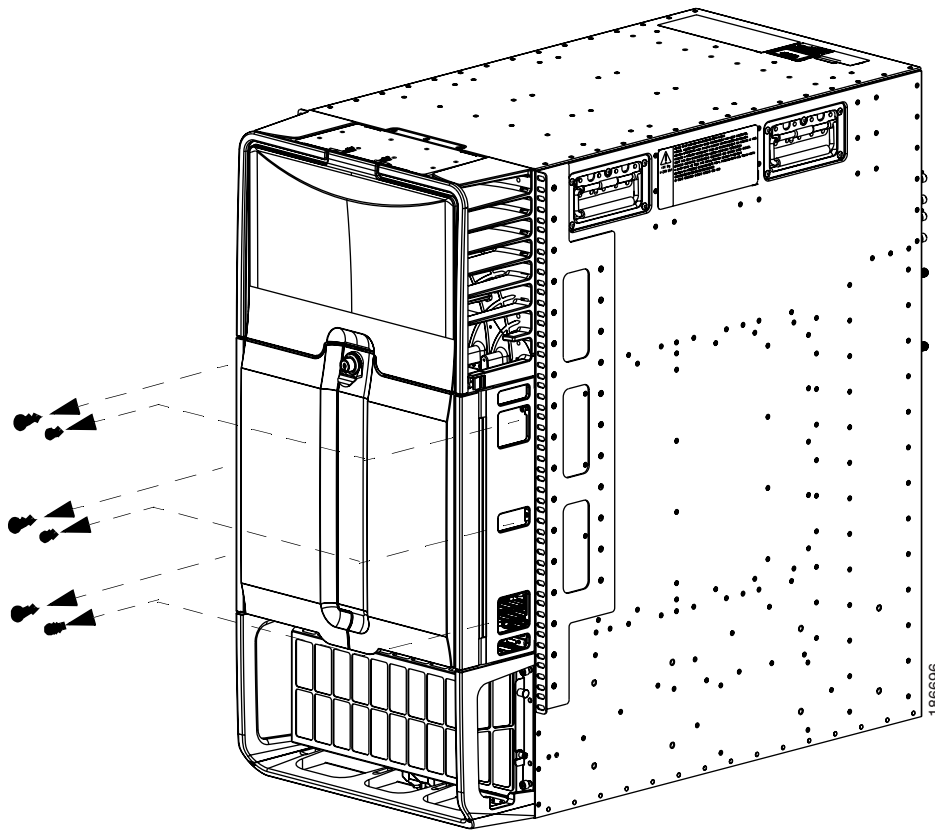


## Installing the Front Doors and Frame Assembly

After you have finished moving the chassis to its rack, you can install its front doors and frame assembly.

To install the front doors and frame assembly, follow these steps:

**Step 1**    Align each of the two front doors on a side of the mid frame area, and attach it by screwing in three screws as shown in Figure 8-7.

*Figure 8-7* *Installing the Front Doors*
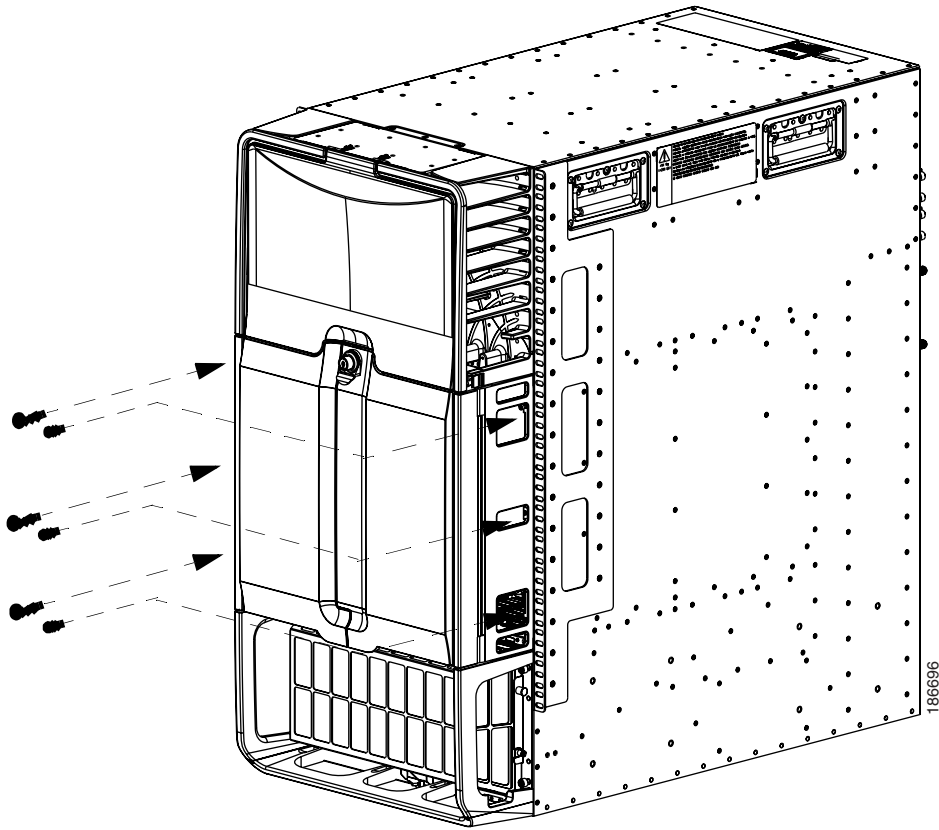
**Step 2**    Align the bottom frame assembly so that its four screw holes align to screw holes in the bottom of the chassis, and then screw in four screws to attach the bottom frame to the chassis (see Figure 8-8).

*Figure 8-8*        *Installing the Bottom Frame*
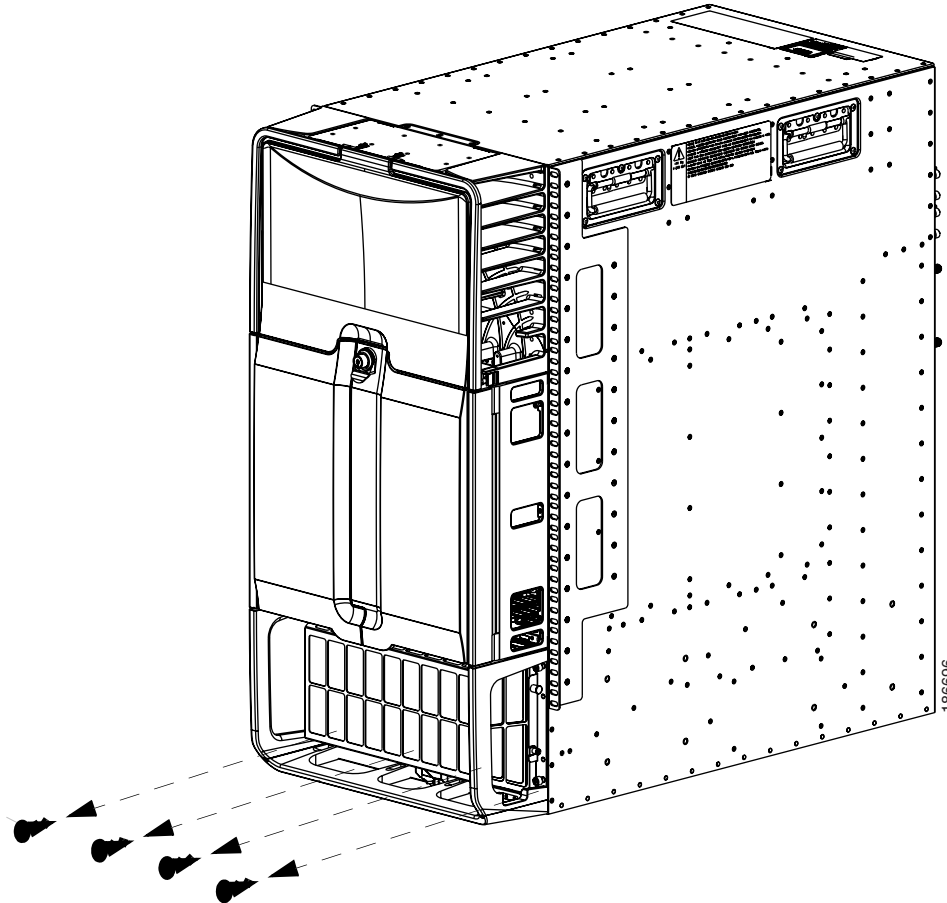


**Step 3**    Install the side frame pieces by following these steps to attach it to the EMI frame:

**a.** On the EMI frame, which covers the air intake area on the lower front side of the chassis, loosen and completely unscrew each of the four captive screws that hold the frame to the chassis.

**b.** Pull the EMI frame away from the chassis.

**c.** On each side of the EMI frame, align a side frame piece so that its two screw holes align to two screw holes, each in a corner of the EMI frame. Screw in one screw in each of these holes so that each of the two side frame pieces is firmly attached to the EMI frame.

**d.** Re-align the EMI frame to the air intake area on the chassis and screw its four captive screws to the chassis, and tighten the captive screws to 8 in. lbs.

**Figure 8-9        Removing a Middle Door Assembly**
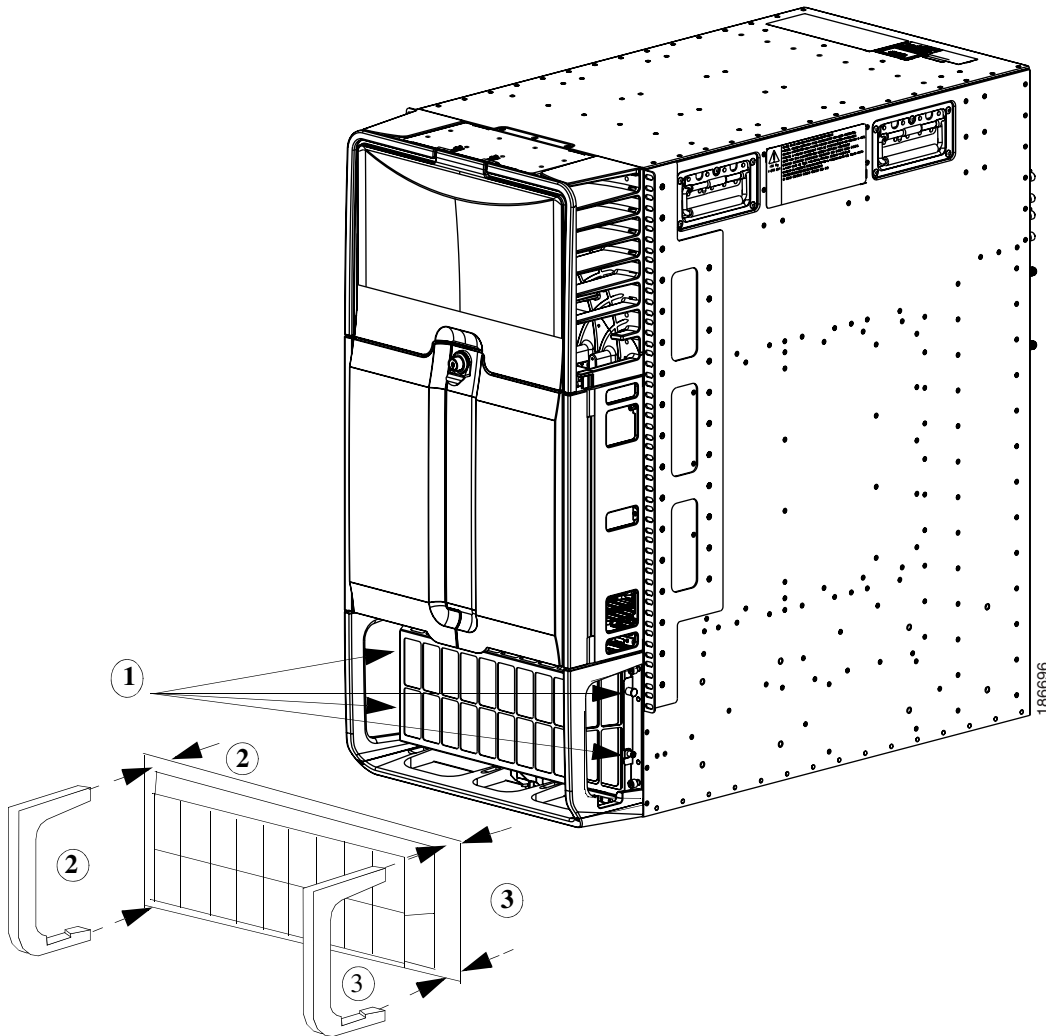


# Replacing the Cisco Nexus 7010 System Air Filter

You can replace the optional air filter while the Nexus 7010 system is operational.

**Note**    Only the Cisco Nexus 7010 device includes an optional air filter.

To replace the air filter, follow these steps:

**Step 1**    On the left and right side of the existing air filter, loosen the two captive screws so they are no longer attached to the chassis. The air filter can be found covering the air intake area at the bottom of the front side of the chassis.

**Step 2** With one hand holding the air filter in place, use the other hand to pull out the spring pin on one side of the air filter. Pull that side of the air filter away from the chassis and release the spring pin when it is clear of the bracket on the EMI frame.

**Step 3** Switch the hands holding the air filter and use the other hand to pull out the spring pin on the other side of the air filter. Pull the air filter away from the chassis and release the spring pin.

**Step 4** Align the replacement air filter to the EMI frame covering the air intake area.

**Step 5** Use one hand on the air filter to hold it in place while you use the other hand to pull out the spring pin on one side of the air filter. Adjust the air filter so that the spring pin will be released into its hole in the EMI frame bracket.

**Step 6** Switch the hands holding the air filter and use the other hand to pull out the other spring pin on the other side of the air filter. With the spring pin pulled out, position the air filter so that the pin will be released into its hole on the EMI frame bracket. Release the spring pin and make sure that it holds the air filter on to the EMI frame.

**Step 7** Screw in and tighten both captive screws, one on each side of the air filter.

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**A P P E N D I X    A**

# Technical Specifications

This appendix describes the technical specifications for the Nexus 7000 system and includes these sections:

## Environmental Specifications for the Cisco Nexus 7000 Series Systems

Table A-1 lists the environmental specifications for the Cisco Nexus 7000 Series systems.

*Table A-1    Environmental Specifications for the Cisco Nexus 7000 Series Switches*

| Description | | Cisco Nexus 7010 | Cisco Nexus 7018 |
|---|---|---|---|
| Temperature | Ambient operating | 32 to 104ºF (0 to 40ºC) | 32 to 104ºF (0 to 40ºC) |
| | Ambient nonoperating | –40 to 158ºF (–40 to 70ºC) | –40 to 158ºF (–40 to 70ºC) |
| Relative humidity | Ambient (noncondensing) operating | 5 to 90% (45 to 50% recommended) | 5 to 90% (45 to 50% recommended) |
| | Ambient (noncondensing) nonoperating and storage | 5 to 95% | 5 to 95% |
| Altitude | Operating | –500 to 13,000 feet (–150 to 4,000 meters) | –500 to 13,000 feet (–150 to 4,000 meters) |
| | Storage | –1,000 to 30,000 feet (–305 to 9,144 meters) | –1,000 to 30,000 feet (–305 to 9,144 meters) |

*Table A-1          Environmental Specifications for the Cisco Nexus 7000 Series Switches  (continued)*

| Description | | Cisco Nexus 7010 | Cisco Nexus 7018 |
|---|---|---|---|
| Noise | Sound pressure levels | | |
| | Without air filter | 67.2 dBA | 65.0 dBA |
| | With air filter | 70.2 dBA | — |
| | Sound power levels | | |
| | Without air filter | 78.9 dBA | 74.2 dBA |
| | With air filter | 81.7 dBA | — |

# Physical Specifications for the Cisco Nexus 7000 Series Devices

Table A-2 lists the physical specifications for the Cisco Nexus 7000 Series systems.

*Table A-2          Dimensions for the Nexus 7000 Series Chassis*

| Chassis | Width | Depth | Height[1] |
|---|---|---|---|
| Cisco Nexus 7010 | 17.3 inches (43.9 cm) | 38.0 inches (96.5 cm) | 36.75 inches (93.3 cm) (21.0 RU) |
| Cisco Nexus 7018 | 17.3 inches (43.9 cm) | 38.0 inches (96.5 cm) | 43.75 inches (111.1 cm) (25.0 RU) |

1.  The height includes the bottom-support rail.

The Cisco Nexus 7010 component weights, quantities, and mean time between failures (MTBF) are listed in Table A-3, and the Cisco Nexus 7018 component weights, quantities, and MTBF are listed in Table A-4. The weights in these tables do not include the rack or cabinet that holds the chassis or the interface and power cables. For those weights, see the documentation provided by the manufacturers of those components.

*Table A-3          Weights, Quantities, and MTBF for the Cisco Nexus 7010 Chassis Components*

| Component | Weight per Unit | Quantity | MTBF[1] (Hours) per Unit |
|---|---|---|---|
| Chassis | 200 lbs. (90.9 kg) | 1 | 264,649 |
| Supervisor module | 10 lbs. (4.5 kg) | 2 | 79,725 |
| 48-port 10/100/1000-Ethernet I/O module | 14 lbs. (6.4 kg) | 1 to 8 (mix of either or both types of I/O modules) | 74,373 |
| 48-port 1-Gigabit Ethernet I/O module | 15 lbs. (7.7 kg) | | 74,742 |
| 32-port 10-Gigabit Ethernet I/O module | 18.5 lbs. (8.4 kg) | | 33,652 |
| Fabric module | 4 lbs. (1.8 kg) | 3 to 5 | 649,295 |
| System fan tray | 20 lbs. (9.1 kg) | 2 | 264,649 |
| Fabric fan tray | 5 lbs. (2.3 kg) | 2 | 264,649 |
| 6-kW power supply unit | 18 lbs. (8.2 kg) | 2 to 3 | 341,536 |

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*Table A-3        Weights, Quantities, and MTBF for the Cisco Nexus 7010 Chassis Components*

| Component | Weight per Unit | Quantity | MTBF[1] (Hours) per Unit |
|---|---|---|---|
| 7.5-kW power supply unit | 25.5 lbs. (11.6 kg) | 2 to 3 | 341,536 |
| Mid-frame doors and frame (optional) | — | 0 or 1 | — |

1. The predicted mean time between failure (MTBF) is based on the Bellcore Methodology.

*Table A-4        Weights, Quantities, and MTBF for the Cisco Nexus 7018 Chassis Components*

| Component | Weight per Unit | Quantity | MTBF[1] (Hours) per Unit |
|---|---|---|---|
| Chassis | 187 lbs. (85.0 kg) | 1 | 117,858 |
| Supervisor module | 10 lbs. (4.5 kg) | 2 | 79,725 |
| 48-port 10/100/1000-Ethernet I/O module | 14 lbs. (6.4 kg) | 1 to 16 (mix of either or both types of I/O modules) | 74,373 |
| 48-port 1-Gigabit Ethernet I/O module | 15 lbs. (7.7 kg) | | 74,742 |
| 32-port 10-Gigabit Ethernet I/O module | 18.5 lbs. (8.4 kg) | | 33,652 |
| Fabric module | 7.5 lbs. (3.4 kg) | 3 to 5 | 421,088 |
| Fan tray | 25.8 lbs. (11.7 kg) | 2 | 276,352 |
| 6-kW power supply unit | 18 lbs. (8.2 kg) | 2 to 4 | 341,536 |
| 7.5-kW power supply unit | 25.5 lbs. (11.6 kg) | 2 to 4 | 341,536 |
| Front door (optional) | — | 0 or 1 | — |

1. The predicted mean time between failure (MTBF) is based on the Bellcore Methodology.

# Power Specifications for the Cisco Nexus 7000 Series Devices

The number of power supplies that a Cisco Nexus 7000 Series switch requires depends on the quantities and types of modules that you include in the switch chassis. the type of power supply unit that you are using, and the power redundancy mode that you are using.

The following topics explain how to calculate the device power requirements and the amount of power available for each type of power supply configuration mode:

- Power Requirements for Device Components, page A-3
- Power Supply Configuration Modes, page A-4

## Power Requirements for Device Components

To determine the power requirements of the Cisco Nexus 7000 Series switches, add the power requirements of each of its components. For each component, multiply the number of its modules by its maximum or typical power requirement. To find the quantities and power requirements for each Cisco Nexus 7010 switch, see Table A-5. To find the quantities and power requirements for each Cisco Nexus 7018 switch, see Table A-6.

*Table A-5        Power Requirements for the Nexus 7010 System Components*

| Component | Quantity | Maximum | Typical |
|---|---|---|---|
| Supervisor module | 2 | 210 W | 190 W |
| 48-port 10/100/1000-Ethernet I/O module | 1 to 8 | 400 W | 358 W |
| 48-port 1-Gigabit Ethernet I/O module | | 400 W | 358 W |
| 32-port 10-Gigabit Ethernet I/O module | | 750 W | 611 W |
| Fabric module | 3 to 5 | 60 W | 55 W |
| All fan trays (total) | — | 2184 W | 300 W |

*Table A-6        Power Requirements for the Nexus 7018 System Components*

| Component | Quantity | Maximum | Typical |
|---|---|---|---|
| Supervisor module | 2 | 210 W | 190 W |
| 48-port 10/100/1000 Ethernet I/O module | 1 to 16 | 400 W | 358 W |
| 48-port 1-Gigabit Ethernet I/O module | | 400 W | 358 W |
| 32-port 10-Gigabit Ethernet I/O module | | 750 W | 611W |
| Fabric module | 3 to 5 | 100 W | 90 W |
| All fan trays (total) | N.A. | 1433 W | 569 W |

# Power Supply Configuration Modes

You can configure one of the following power modes to either use the combined power provided by the installed power supply units or to provide power redundancy when there is a power loss:

- Combined mode—Provides the maximum amount of available power by utilizing the combined power output from all installed power supply units for device operations. This mode does not provide redundancy.

- Power-supply redundancy mode—Allows you to replace a power supply during device operations. All power supplies are active. The available power is calculated as the least amount of power available from all but one of the power supply units (N+1). The reserve power is the amount of power output by the power supply unit that can output the most power. For example, if three power supply units output 3 kW, 6 kW, and 6 kW, the available power is 9 kW (3 kW + 6 kW) and the reserve power is 6 kW.

- Input source redundancy mode—Takes power from two electrical grids so that if one grid goes down, the other grid can provide the power needed by the device. Each grid powers half of each power supply unit (grid A is connected to the Input 1 receptacle on each power supply unit and grid B is connected to the Input 2 receptacle on each power supply unit). The available power is the amount of power output by the portions of the power supply units that are connected to the same

grid. For example, if three power supply units are connected to a 110-V grid and a 220-V grid, each power supply outputs 1.2 kW for the 110-V grid and 3.0 kW for the 220-V grid. The available power would be 3.6 kW (1.2 kW + 1.2 kW + 1.2 kW) and the reserve power would be 9.0 kW (3.0 kW + 3.0 kW + 3.0 kW).

- Full redundancy mode—Provides both power-supply redundancy and input-source redundancy. This mode allows you to replace a power supply unit without interrupting device operations or continue powering the device if one of two grids goes down. The available power is the lesser amount of output power for power supply redundancy or input source redundancy.

The amount of power available for use with your Cisco Nexus 7000 Series device depends on the number of power supply units, input voltage used, and the power mode used. To determine the amount of available power for 6-kW power supply units, see Table A-7. To determine the amount of power available for 7.5-kW power supply units, see Table A-8.

*Table A-7    Power Availability for 6-kW Power Supply Units*

| | Combined mode | Power supply redundancy mode | Input source redundancy mode | Full redundancy mode |
|---|---|---|---|---|
| Dual inputs per power supply unit | | | | |
| 220-V and 220-V inputs | | | | |
| 1 power supply unit | 6000 W | — | 3000 W | — |
| 2 power supply units | 12,000 W | 6000 W | 6000 W | 6000 W |
| 3 power supply units | 18,000 W | 12,000 W | 9000 W | 9000 W |
| 4 power supply units[1] | 24,000 W | 18,000 W | 12,000 W | 12,000 W |
| 220-V and 110-V inputs | | | | |
| 1 power supply unit | 4200 W | — | 1200 W | — |
| 2 power supply units | 8400 W | 4200 W | 2400 W | 2400 W |
| 3 power supply units | 12,600 W | 8400 W | 3600 W | 3600 W |
| 4 power supply units[1] | 16,800 W | 12,600 W | 4800 S | 4800 W |
| 110-V and 110-V inputs | | | | |
| 1 power supply unit | 2400 W | — | 1200 W | — |
| 2 power supply units | 4800 W | 2400 W | 2400 W | 2400 W |
| 3 power supply units | 7200 W | 4800 W | 3600 W | 3600 W |
| 4 power supply units[1] | 9600 W | 7200 W | 4800 W | 4800 W |
| Single input per power supply unit | | | | |
| 220-V input | | | | |
| 1 power supply unit | 3000 W | — | — | — |
| 2 power supply units | 6000 W | 3000 W | — | — |
| 3 power supply units | 9000 W | 6000 W | — | — |
| 4 power supply units[1] | 12,000 W | 9000 W | — | — |
| 110-V input | | | | |
| 1 power supply unit | 1200 W | — | — | — |

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*Table A-7        Power Availability for 6-kW Power Supply Units*

|  | Combined mode | Power supply redundancy mode | Input source redundancy mode | Full redundancy mode |
|---|---|---|---|---|
| 2 power supply units | 2400 W | 1200 W | — | — |
| 3 power supply units | 3600 W | 2400 W | — | — |
| 4 power supply units[1] | 4800 W | 3600 W | — | — |

1.  A fourth power supply unit can be added to only the Cisco Nexus 7018 device. The Cisco Nexus 7010 holds up to three power supply units.

*Table A-8        Power Availability for 7.5-kW Power Supply Units*

|  | Combined Mode | Power Supply Redundancy Mode | Input Source Redundancy Mode | Full Redundancy Mode |
|---|---|---|---|---|
| Dual inputs per power supply unit | | | | |
| 220-V and 220-V inputs | | | | |
| 1 power supply unit | 7500 W | — | 3750 W | — |
| 2 power supply units | 15,000 W | 7500 W | 7500 W | 7500 W |
| 3 power supply units | 22,500 W | 15,000 W | 11,250 W | 11,250 W |
| 4 power supply units[1] | 30,000 W | 22,500 W | 15,000 W | 15,000 W |
| Single input per power supply unit | | | | |
| 220-V input | | | | |
| 1 power supply unit | 3750 W | — | — | — |
| 2 power supply units | 7500 W | 3750 W | — | — |
| 3 power supply units | 11,250 W | 7500 W | — | — |
| 4 power supply units[1] | 15,000 W | 11,250 W | — | — |

# Power Supply Cable Specifications

For specifications of the AC power cables that you can connect to a 6-kW power supply unit, see Table A-9. For specifications of the AC power cord connectors attached to the 7.5-kW power supply units, see Figure A-10 on page A-10.

*Table A-9        6-kW Power Supply AC Power Cords*

| Locale | Power cord part number | Cord set rating | Power cord reference illustration |
|---|---|---|---|
| Australia and New Zealand | CAB-AC-16A-AUS | 16A, 250 VAC | Figure A-1 |
| Peoples Republic of China | CAB-AC-16A-CH | 16A, 250 VAC | Figure A-2 |
| Continental Europe | CAB-AC-2500W-EU | 16A, 250 VAC | Figure A-3 |
| International | CAB-AC-2500W-INT | 16A, 250 VAC | Figure A-4 |
| Israel | CAB-AC-2500W-ISRL | 16A, 250 VAC | Figure A-5 |
| Japan and North America (non locking) 200-240 VAC operation | CAB-AC-2500W-US1 | 16A, 250 VAC | Figure A-6 |
| Japan and North America (locking) 200-240 VAC operation | CAB-AC-C6K-TWLK | 16A, 250 VAC | Figure A-7 |
| Japan and North America 100-120 VAC operation | CAB-7513AC | 16A, 250 VAC | Figure A-8 |
| Power distribution unit (PDU) | CAB-C19-CBN | | Figure A-9 |
| Switzerland | CAB-ACS-16 | 16A, 250 VAC | Figure A-10 |

*Figure A-1        CAB-AC-16A-AUS Power Cord and Connectors for the 6-kW Power Supply Unit*

*Figure A-2        CAB-AC-16A-CH Power Cord and Connectors for the 6-kW Power Supply Unit*
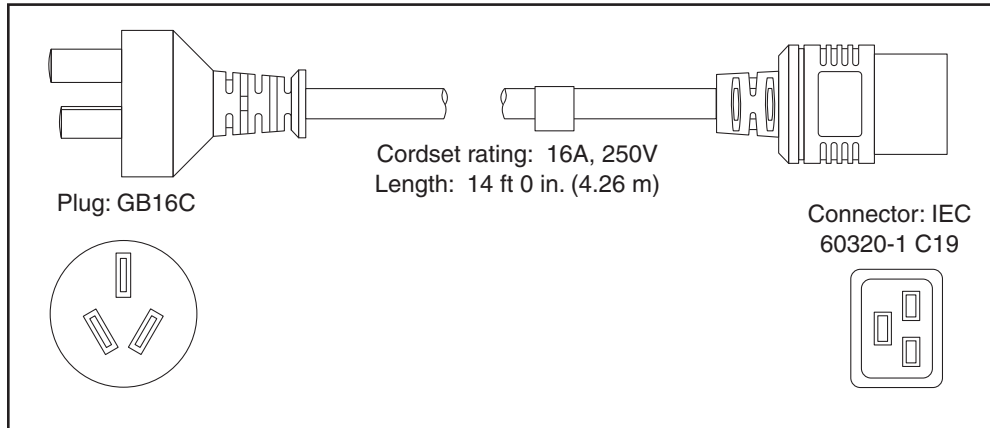


*Figure A-3        CAB-AC-2500W-EU Power Cord and Connectors for the 6-kW Power Supply Unit*
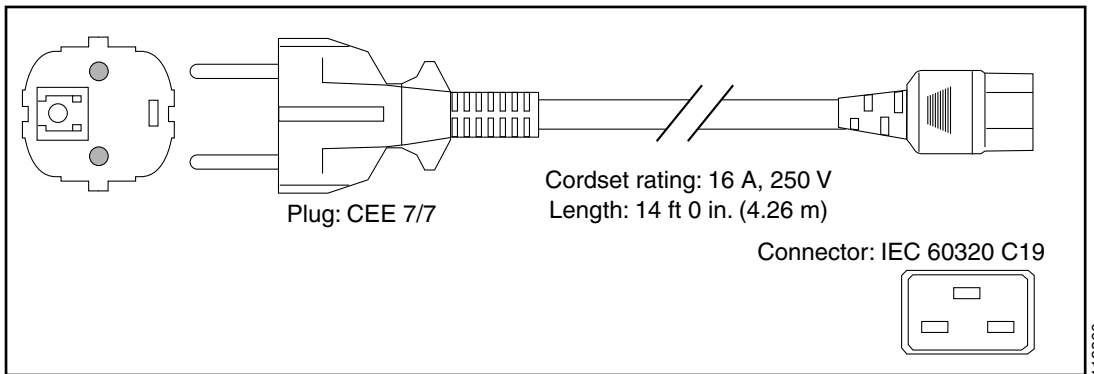


*Figure A-4        CAB-AC-2500W-INT Power Cord and Connectors for the 6-kW Power Supply Unit*
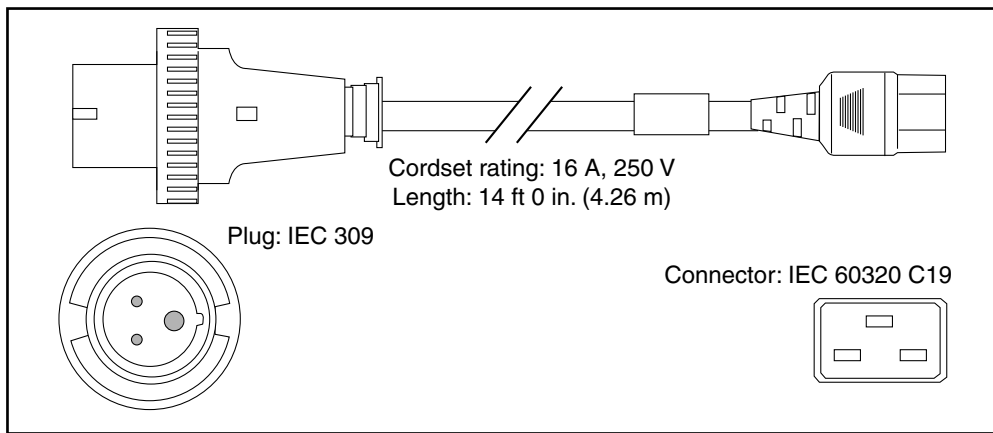
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**Figure A-5    CAB-AC-2500W-ISRL Power Cord and Connectors for the 6-kW Power Supply Unit**
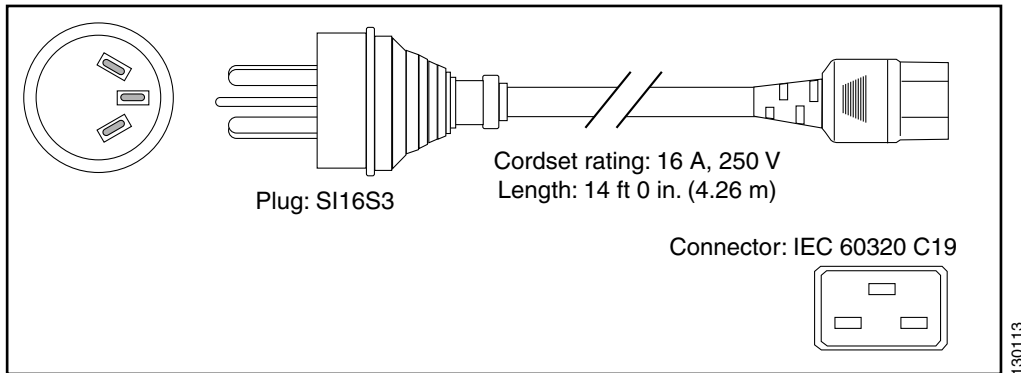


**Figure A-6    CAB-AC-2500W-US1 Power Cord and Connectors for the 6-kW Power Supply Unit**
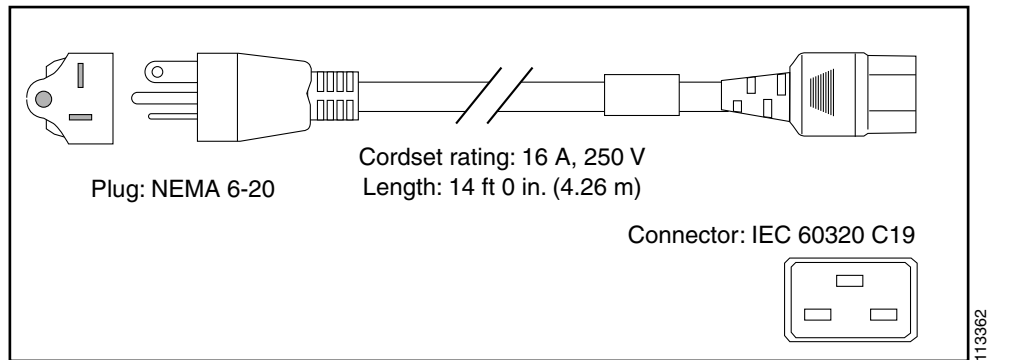


**Figure A-7    CAB-AC-C6K-TWLK Power Cord and Connectors for the 6-kW Power Supply Unit**

*Figure A-8         CAB-7513AC Power Cord and Connectors for the 6-kW Power Supply Unit*
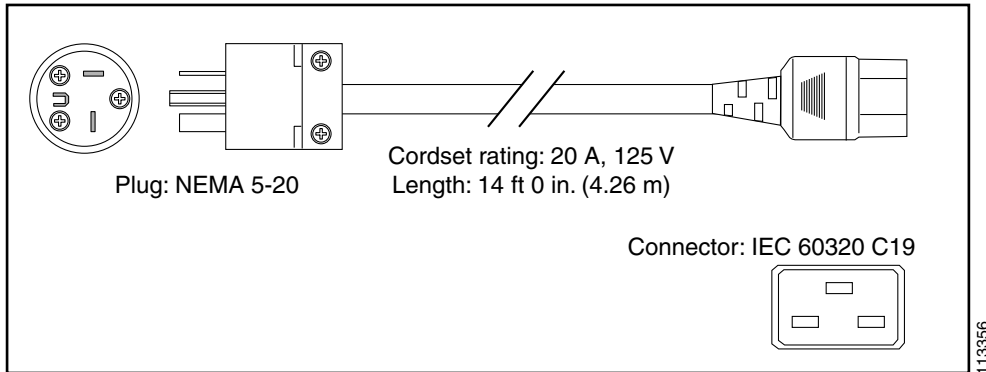


*Figure A-9         CAB-C19-CBN Power Cord and Connectors for the 6-kW Power Supply Unit*
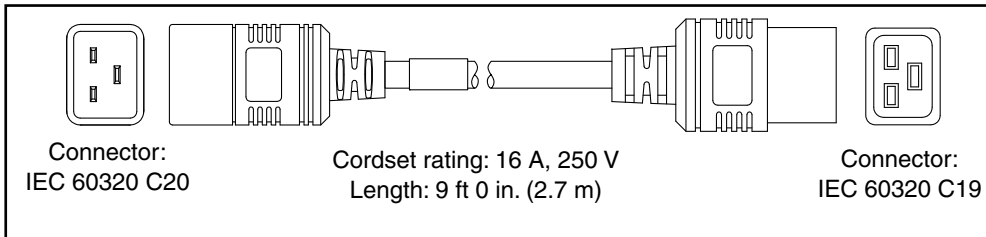


*Figure A-10        CAB-ACS-16 Power Cord and Connectors for the 6-kW Power Supply Unit*
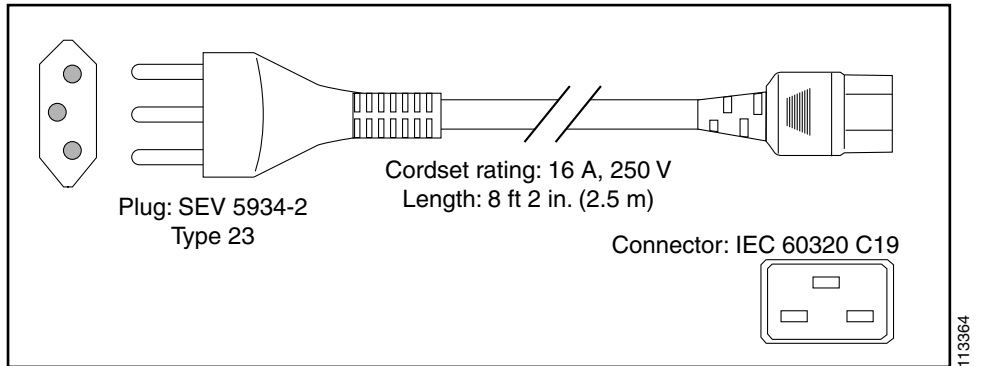


*Table A-10        7.5 kW Power Supply AC Power Cords*

| Local | Cord rating | Power cord reference illustration |
|---|---|---|
| Japan and North America | 30 A, 250 VAC | Figure A-11 |
| International | 32 A, 250 VAC | Figure A-12 |

*Figure A-11* **NEMA L6-30 Power Connector for the 7.5-kW Power Supply Unit**
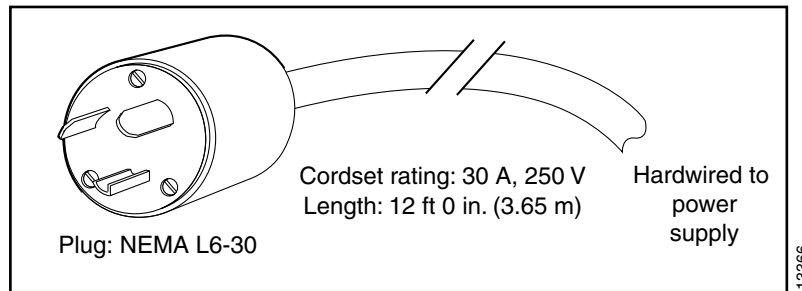


*Figure A-12* **IEC 603090 Power Connector for the 7.5-kW Power Supply Unit**
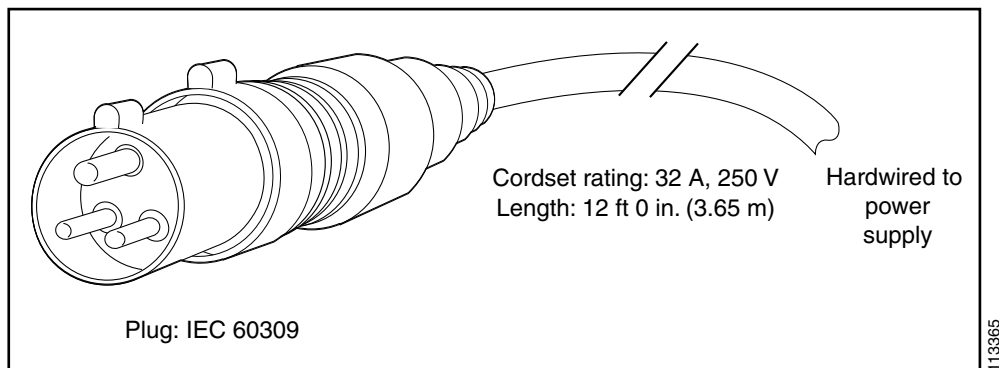


# Chassis Clearances

You must provide adequate clearance for installing the device, replacing device modules, and allowing airflow to and from the switch. All Cisco Nexus 7000 Series switches require at least 38.0 inches (96.5 cm) of clearance in front of the switch and at least 30 inches (76.2 cm) of clearance in back of the switch to install and replace the switch and its components.

**Note** If you need more space for the mechanical lift, include the additional space with the clearance for the front of the chassis.

For the Cisco Nexus 7010 switch, the clearances for installation and replacement of components is adequate for the device airflow. Side clearance is not needed for installation, replacement, or airflow, but should be planned anyway for the cables that connect to the switch (see the documentation provided by the cable manufacturer for this information). Cabinets used to hold the chassis typically provide the side clearance required for cable routing.

For the Cisco Nexus 7018 switch, the side-to-side airflow requires 11 inches (27.9 cm) of space on each side of the switch (or 22 inches [55.8 cm] between Cisco Nexus 7018 switches). You can route the I/O cables on the left front side of the chassis, but on the right side, you can route cables only on the upper right side of the chassis. This cabling configuration allows coolant air to enter the lower front side or from the floor to the air intake areas on the right side of the switch.

# Facility Cooling Requirements

The Cisco Nexus 7000 Series switches dissipate considerable power that generates much heat. The following is the heat dissipation requirement for these switches:

- Cisco Nexus 7010 dissipates up to 35,162 BTUs per hour
- Cisco Nexus 7018 dissipates up to 51,195 BTUs per hour

# Chassis Airflow

The Cisco Nexus 7000 Series switches use either front-to-back or side-to-side airflow for device cooling. The Cisco Nexus 7010 switch uses front-to-back airflow as shown in Figure A-13, and the Cisco Nexus 7018 switch uses side-to-side airflow to cool its modules and front-to-back airflow to cool its power supply units as shown in Figure A-14. Both switches are designed to work in a hot-aisle/cold-aisle environment, but the Cisco Nexus 7018 switch design also requires side clearances to allow airflow in and out the sides.

*Figure A-13    Airflow for the Cisco Nexus 7010 Chassis*
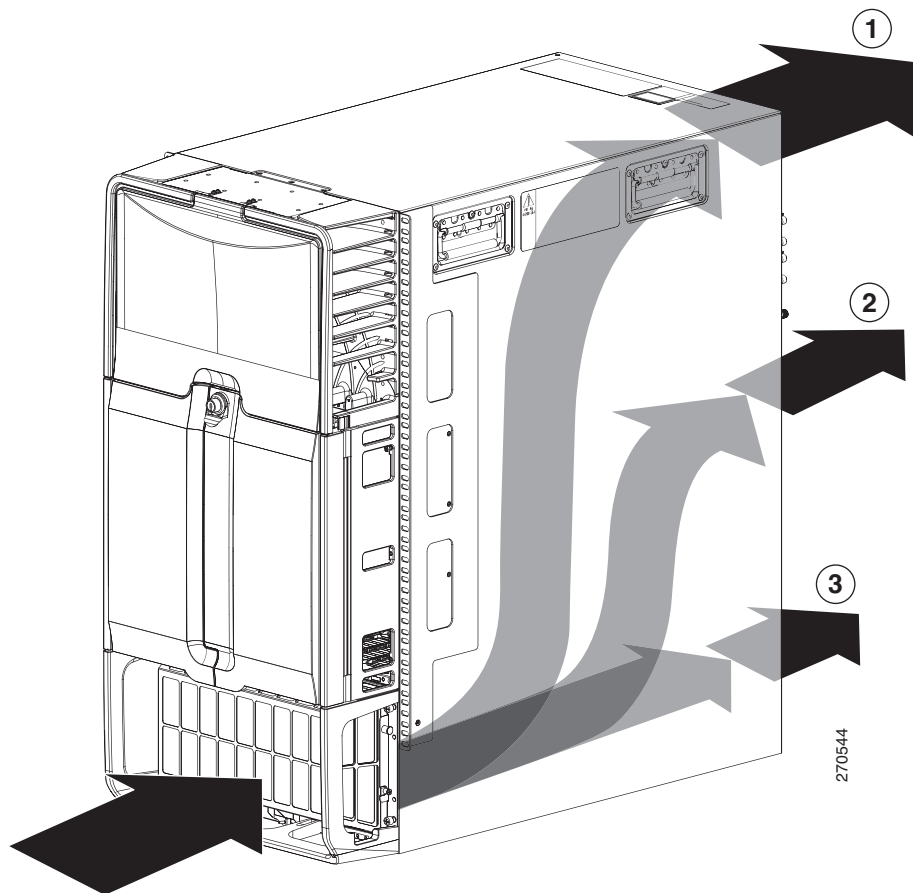
| **1** | Airflow for cooling the supervisor and I/O modules | **2** | Airflow for cooling the fabric modules |
|---|---|---|---|
| **3** | Airflow for cooling the power supply units | | |

*Figure A-14    Airflow for the Cisco Nexus 7018 Chassis*
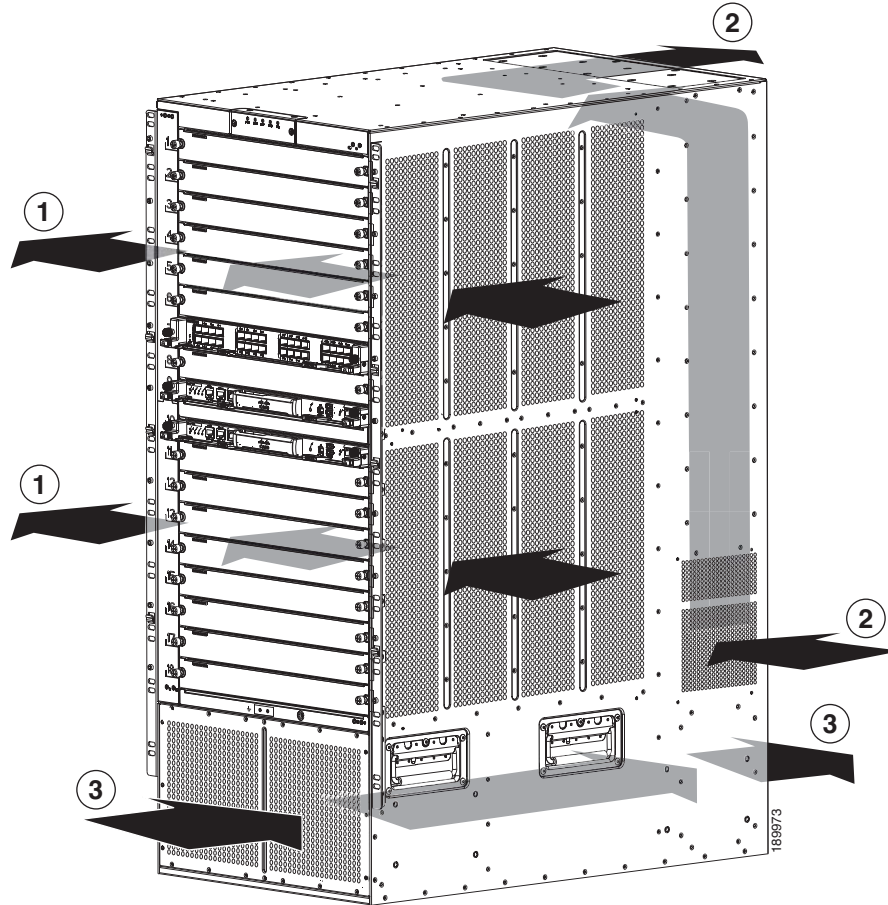


| **1** | Airflow for cooling the supervisor and I/O modules | **2** | Airflow for cooling the fabric modules |
|---|---|---|---|
| **3** | Airflow for cooling the power supply units | | |

To allow for the Cisco Nexus 7018 switch to take in air from the cold aisle and floor on the right side, you should route cables on the left front side of the device. If necessary, you can route cables on the upper right front side of the chassis, which leaves the lower right side open to cooling air from the cold aisle in front of the chassis. By having the cables on the left side and leaving the left rear side unobstructed, the exhaust is directed to the hot aisle in back.

For the clearances required on each side of the switch, see the "Chassis Clearances" section on .

A P P E N D I X **B**

# Cable and Port Specifications

This appendix specifies the cables and port connectors used with the Cisco Nexus 7000 Series devices.

This appendix includes the following sections:

- Module Connectors, page B-1

## Module Connectors

This section describes the types of module connectors used with the Cisco Nexus 7000 Series devices:

- RJ-45 Connector, page B-1
- SFP+ Transceivers, page B-2

### RJ-45 Connector

The RJ-45 connector connects Category 3, Category 5, Category 5e, Category 6, or Category 6A foil twisted-pair or unshielded twisted-pair cable from the external network to the following module interface connectors:

- Supervisor modules
    - CONSOLE port
    - COM1/AUX port
    - MGMT ETH port
    - CMP MGMT ETH port
- 48-port 10/100/1000 Ethernet modules
    - 10/100/1000 ports

⚠
**Caution**    To comply with GR-1089 intrabuilding, lightning immunity requirements, you must use foil twisted-pair (FTP) cable that is properly grounded at both ends.

## SFP+ Transceivers

Table B-1 lists general specifications for the cables used with the 10-Gigabit Ethernet SFP+ transceivers.

*Table B-1*        ***General Specifications for the Cables Used with 10 Gigabit Ethernet SFP+***
                    ***Transceivers***

| Transceiver | Cable Type | Connector Type | Wavelength (nm) | Transmit Power (dBm) | Receive Power (dBm) | Core Size (microns) | Cable Distance |
|---|---|---|---|---|---|---|---|
| SFP-10G-SR (short range) | MMF | Dual LC/PC | 840-860 | –7.3 to -1.2 | –9.9 to -1.0 | 50 | 300 m (984 feet) |
| | | | | | | 62.5 | 33 m (108 feet) |
| SFP-10G-LR (long range) | SMF | Dual LC/PC | 1260-1355 | –8.2 to 0.5 | –14.4 to 0.5 | G.652 fiber | 10 km (6.2 miles) |

Table B-2 lists the environmental conditions and power requirement specifications for the 10-Gigabit Ethernet SFP+ transceivers.

*Table B-2*        ***Environmental Conditions and Power Requirement Specifications for the 10-Gigabit***
                    ***Ethernet SFP+ Transceivers***

| Parameter | Minimum | Maximum |
|---|---|---|
| Storage temperature | –40°C (-40°F) | 85°C (185°F) |
| Operating temperature | 0°C (32°F) | 70°C (158°F) |
| Case temperature | 0°C (32°F) | 70°C (158°F) |
| Module supply voltage | 3.1 V | 3.5 V |

# SFP Transceivers

Table B-3 lists the general specifications for the cables used with the 1-Gigabit Ethernet SFP transceivers.

*Table B-3*        ***General Specifications for the Cables Used with 1-Gigabit Ethernet SFP Transceivers***

| Transceiver | Cable Type | Connector type | Wavelength (nm) | Transmit Power (dBm) | Receive Power (dBm) | Core Size (microns) | Cable Distance |
|---|---|---|---|---|---|---|---|
| LX | | | | | | | |
| SX | | | | | | | |
| ZX | | | | | | | |

Table B-4 lists the environmental conditions and power requirement specifications for the 10-Gigabit Ethernet SFP+ transceivers.

*Table B-4      Environmental Conditions and Power Requirement Specifications for the 1-Gigabit Ethernet SFP Transceivers*

| Parameter | Minimum | Maximum |
|---|---|---|
| Storage temperature | | |
| Operating temperature | | |
| Case temperature | | |
| Module supply voltage | | |

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**A P P E N D I X   C**

# Chassis and Module LEDs

This appendix lists the Cisco Nexus 7000 Series system LEDs and describes the conditions they indicate for the chassis and each type of module installed in the chassis.

Table C-1 describes the system LEDs that are located on the chassis.

*Table C-1      System LEDs*

| LED | Color | Condition |
|-----|-------|-----------|
| PSU | Green | Power supply units are all operational. |
|     | Amber | One of the following problems has occurred: <br> • Any power supply unit LED is red. <br> • Any power supply unit is down. |
| FAN | Green | Fan tray modules are all operational. |
|     | Amber | At least one fan tray module has a red STATUS LED. |
| SUP | Green | Supervisor modules are all operational. |
|     | Amber | At least one supervisor module has a red STATUS LED. |
| FAB | Green | Fabric modules are all operational. |
|     | Amber | At least one fabric module has a red STATUS LED. |
| IOM | Green | I/O modules are all operational. |
|     | Amber | At least one I/O module has a red STATUS LED. |

Table C-2 describes the supervisor module LEDs.

*Table C-2        Supervisor Module LEDs*

| LED | Status | Description |
| --- | --- | --- |
| STATUS | Green | All diagnostics pass. The module is operational (normal initialization sequence). |
| | Red | The module has detected a slot ID parity error and will not power on or boot up.<br>or<br>The module is not fully inserted and does not have a reliable connection to the midplane.<br>or<br>The diagnostic test has failed. |
| | Blinking red | The inlet air temperature of the system has exceeded the safe operating temperature limits of the card (a major environmental warning). The card has been shut down to prevent permanent damage. The system will be shut down after two minutes if this condition is not cleared.<br>or<br>The module is resetting, and both ejector levers are out. |
| | Off | The module is not receiving power |
| ID | Blinking blue | The operator has activated this LED to identify this module in the chassis. |
| | Off | This module is not being identified. |
| SYSTEM | Green | All chassis environmental monitors are reporting okay. |
| | Amber | At least one power supply has failed or the power supply fan has failed. |
| | Red | The temperature of the supervisor engine major threshold has been exceeded. |
| | Off | The slot has detected a slot ID parity error. |
| ACTIVE | Green | The supervisor module is operational and active. |
| | Amber | The supervisor module is in standby mode. |
| PWR MGMT | Green | Sufficient power is available for all of the installed modules. |
| | Amber | Insufficient power is available for all of the installed modules. |
| MGMT ETH | Green | The management port is operational. |
| | Amber | The management port link has been disabled through the software. |
| | Flashing Amber | The management port link is bad and has been disabled due to a hardware failure. |
| | Off | The module has not detected a signal. |
| LINK | Green | The module has detected a link. |
| | Off | The module does not detect a link. |

***Table C-2***      ***Supervisor Module LEDs  (continued)***

| LED | Status | Description |
|---|---|---|
| ACT | Flashing green | The module is transmitting or receiving. |
| | Off | The module is not transmitting or receiving. |
| ACT LOG FLASH | Green | The log flash CompactFlash is being accessed. Do not remove the Compact Flash until the LED is off. |
| | Off | The expansion flash CompactFlash is not being accessed. You can remove the CompactFlash while this LED is off. |
| ACT EXPANSION FLASH | Green | The expansion flash CompactFlash is being accessed. Do not remove the Compact Flash until the LED is off. |
| | Off | The log flash CompactFlash is not being accessed. You can remove the CompactFlash while this LED is off. |
| CMP MGMT ETH | Green | The management port is operational. |
| | Amber | The management port link has been disabled through the software. |
| | Flashing amber | The management port link is bad and has been disabled due to a hardware failure. |
| | Off | The module does not detect a signal. |
| CMP STATUS | Green | All diagnostics pass. The CMP is operational (normal initialization sequence). |
| | Amber | Sufficient power is not available for all modules. |
| | Flashing amber | The diagnostic test has failed. or The CMP is not operational because a fault has occurred during the initialization sequence. |
| | Red | The module has detected a slot ID parity error. |
| | Off | The CMP is not receiving power. |
| LINK | Green | The module has detected a link. |
| | Off | The module has not detected a link. |
| ACT | Flashing green | The module is transmitting or receiving. |
| | Off | The module is not transmitting or receiving. |

Table C-3 describes the I/O module LEDs.

***Table C-3***      ***I/O Module LEDs***

| LED | Status | Description |
|---|---|---|
| ID | Blinking blue | The operator has activated this LED to identify this module in the chassis. |
| | Off | This module is not being identified. |

*Table C-3        I/O Module LEDs (continued)*

| LED | Status | Description |
|---|---|---|
| Status | Green | All diagnostics pass. The module is operational (normal initialization sequence). |
| | Red | The module has detected a slot ID parity error and will not power on or boot up.<br><br>or<br><br>The module is not fully inserted, and it is not making a reliable connection with the supervisor.<br><br>or<br><br>The module has failed diagnostic tests and has powered down. |
| | Blinking red | The device has just been powered on, and the module is resetting.<br><br>or<br><br>The module is resetting and both ejector levers are out.<br><br>or<br><br>The module has been inserted during the initialization process.<br><br>or<br><br>The module could not power up because of insufficient power.<br><br>or<br><br>An overtemperature condition has occurred. A major temperature threshold has been exceeded during environmental monitoring. |
| | Off | The module is not receiving power. |
| Link (for each port) | Green | The port is active (the link is connected and active). |
| | Orange | The port is disabled by the operator or is not initializing. |
| | Blinking orange | The port is faulty and disabled. |
| | Off | The port is not active or the link is not connected. |

Table C-4 describes the fabric module LEDs.

*Table C-4      Fabric Module LEDs*

| LED | Status | Description |
|---|---|---|
| Status | Green | All diagnostics pass. The module is operational (normal initialization sequence). |
| | Red | The diagnostic test has failed. The module is not operational because a fault has occurred during the initialization sequence.<br><br>or<br><br>The inlet air temperature of the system has exceeded the safe operating temperature limits of the card (a major environmental warning). The card has been shut down to prevent permanent damage. |
| | Blinking red | The fabric module has just been inserted and is booting up.<br><br>or<br><br>An overtemperature condition has occurred and the module has powered down.<br><br>or<br><br>The power was turned off with a CLI command.<br><br>or<br><br>The module is resetting and both ejector levers are out. |
| ID | Blinking blue | The operator has activated this LED to identify this module in the chassis. |
| | Off | This module is not being identified. |

Table C-5 describes the power supply unit LEDs.

*Table C-5      Power Supply LEDs*

| LED | Color | Condition |
|---|---|---|
| Input 1 | Green | The AC input voltage is within the valid range. |
| | Off | The AC input voltage is outside the valid range. |
| Input 2 | Green | The AC input voltage is within the valid range. |
| | Off | The AC input voltage is outside the valid range. |
| Output | Green | The DC output power is within the valid range. |
| | Off | The DC output power is outside the valid range. |
| Fault | Off | The DC output voltage and power supply unit tests are okay. |
| | Flashing red | Self-diagnostic tests have failed or another power supply failure has occurred. |
| ID | Blinking blue | The operator has activated this LED to identify this module in the chassis. |
| | Off | This module is not being identified. |

Table C-6 describes the fan tray LEDs.

*Table C-6        Fan Tray LEDs*

| LED | LED Indication | Condition |
|---|---|---|
| STATUS | Green | The fan tray is operational. |
| | Flashing red | One or more fans is running below the threshold speed. The fan tray is receiving insufficient power. |
| | Off | No power is going to the fan tray. |
| ID | Blinking blue | The operator has activated this LED to identify this module in the chassis. |
| | Off | This module is not being identified. |

**APPENDIX D**

# Repacking the Cisco Nexus 7000 Series Device for Shipment

This appendix describes how to repack the Cisco Nexus 7000 Series system for shipment. This appendix includes the following sections:

## Disconnecting the Cisco Nexus 7000 Series System

Before you can remove the Cisco Nexus 7000 Series system components and repack the system, you must disconnect the system from the internet and the AC power source as explained in the following topics:

⚠️ **Caution** When you are handling the Cisco Nexus 7000 Series device or switch components, you must follow the ESD protocol at all times to prevent ESD damage. This protocol includes but is not limited to wearing an ESD wrist strap that you connect to the earth ground in the data center building.

## Powering Down the Cisco Nexus 7000 Series System

To power down the Cisco Nexus 7000 Series system, turn the power switch on each power supply from Power to STBY, and then disconnect the power cords to each power supply. The system is powered down when the LEDs on each power supply are all off.

## Disconnecting the System from the Console

To disconnect the system from the console, you must disconnect each interface cable that connects to the management Ethernet (Mgmt Ethernet) and CMP Ethernet interfaces on each supervisor module. You must also disconnect the cables and their adapters from the console.

# Disconnecting the System from the Network

To disconnect the system from the network, you must remove each I/O cable from the system I/O modules.

# Repacking the System Components

You should repack the Cisco Nexus 7000 Series system in the packing materials in which it was originally shipped. To make the Cisco Nexus 7000 Series lighter and easier to move, remove its power supply units and its optional features, such as the midframe doors, lower frame, and air filter. You should pack each of these components separately. Using a mechanical lift, move the chassis from the rack to its shipping pallet and complete the packaging for shipment.

This section includes the following topics:

## Prerequisites for Repacking the System

You must disconnect the system from the network and power it down before you begin removing it from the rack or cabinet.

## Required Tools and Equipment for Repacking the System

Before you repack the Cisco Nexus 7000 Series chassis into the original shipping materials, make sure that you have the following tools and equipment:

- Mechanical lift capable of lifting 500 lbs (227 kg)
- No. 1 Phillips screwdriver with torque capability
- 3/16-inch flat-blade screwdriver
- ESD wrist strap
- Original shipping container and packing materials:
  - Two pallets (typically with the smaller pallet bolted on top of the larger pallet)
  - 4 angle brackets with 8 bolts and 16 screws
  - Ployethylene cushion
  - 2 three-segment dividers
  - 3 power supply boxes
  - 2 J-box sides
  - 1 lid
  - 6 corro clips
- Strapping

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**Caution**    When you are handling the Cisco Nexus 7000 Series deivce or device components, you must follow the ESD protocol at all times to prevent ESD damage. This protocol includes but is not limited to wearing an ESD wrist strap that you connect to the earth ground in the data center building.

# Repacking the Cisco Nexus 7010 Device

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**Caution**    Do not subject the pallet, system, or package to water or moisture.

To repack the Cisco Nexus 7010 system, follow these steps:

**Step 1**    Disconnect the system from the network and power it down as follows:

   **a.**    Power down the system by turning the power switch on each power supply to STBY.

   **b.**    Remove the power cables from the AC source and power supply.

   **c.**    Disconnect the cables that attach the Management and CMP processors on each supervisor module to a console.

   **d.**    Disconnect the I/O cables from the I/O modules.

**Step 2**    If the chassis includes an optional air filter, remove it as follows:

   **a.**    On the lower left side and right side of the air filter, loosen the captive screw (one on each side) until it no longer connects with the chassis.

   **b.**    On the upper left side and right side of the air filter, simultaneously pull out the two spring pins (one on each side) and then pull the air filter away from the EMI frame and chassis.

**Step 3**    If the chassis includes the optional midframe doors, remove the doors and their frames as follows:

   **a.**    Remove each of the two front doors by loosening and removing the four screws that hold each door frame to the chassis.

   **b.**    Remove the EMI frame, which holds the lower side frame pieces, by loosening the four captive screws on the EMI frame until they no longer connect with the chassis.

   **c.**    Remove each of the two side frames from the EMI frame by loosening and removing the two screws that hold each side frame piece to the EMI frame.

   **d.**    Reattach the EMI frame to the chassis by placing the EMI frame over the air intake area and aligning its captive screws to their holes in the chassis. Securely tighten each of the captive screws.

   **e.**    Remove the bottom frame by loosening and removing the three screws on the frame.

**Step 4**    Remove each power supply unit as follows:

   **a.**    Set out the power supply box and packaging materials.

   **b.**    Make sure that the power supply switch is set to standby (STBY).

   **c.**    Loosen the four captive screws on the front of the power supply unit until each screw is no longer in contact with the chassis.

   **d.**    Grasp the power supply handle and pull the power supply unit part way out of the chassis.

**e.** Place your other hand underneath the power supply unit to support its weight and then remove the power supply unit from the chassis.

**f.** Place the power supply in its packing bag.

**g.** Place the bagged power supply unit in its cardboard holder. See Figure D-1.

*Figure D-1      Packing a Power Supply Unit*
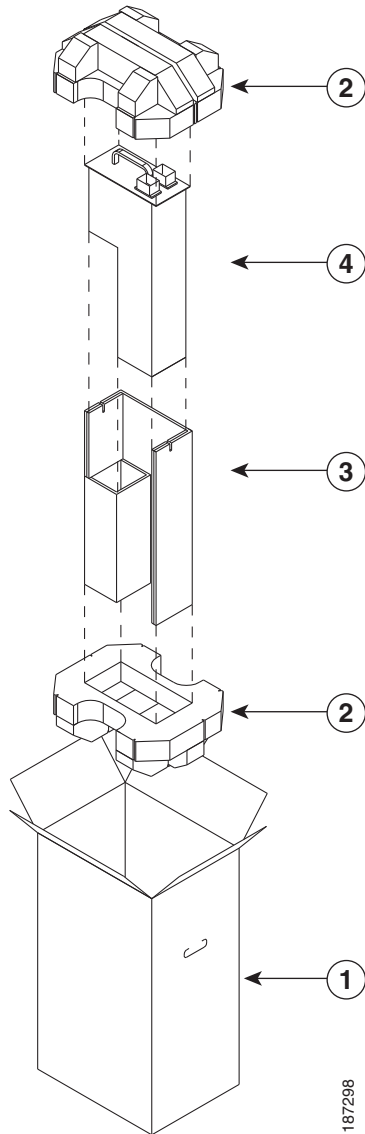


| 1 | Power supply box | 2 | Packing cushions |
|---|---|---|---|
| 3 | Cardboard holder | 4 | Power supply unit |

**h.** Insert each end of the power supply unit and its holder in a packing cushion.

**i.** Open the power supply box, and insert the power supply unit and its packing materials.

**j.** Close the box and tape its flaps shut.

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**Step 5**   Disconnect each system ground by loosening and removing the two M4 screws that attach the grounding cable to the chassis, and disconnect the other end of the grounding cable. Place the grounding lug and screws (not the cable) in the accessories box.

**Step 6**   Loosen and remove the 6 screws that hold each side of the chassis (12 screws total) to the vertical mounting rails on the rack or cabinet.

**Step 7**   Position a mechanical lift in front of the chassis and raise its platform to the bottom of the chassis (or no more than 0.25 inches (0.6 cm) below the bottom of the chassis), so that you can push the chassis onto the lift platform.

**Step 8**   Lay the original shipping pallet flat on the floor. This pallet includes a raised portion that is bolted to the larger pallet. Make sure that the raised portion is on top.

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**Caution**   You need four persons for the following step.

**Step 9**   Use at least four persons to push the chassis onto the mechanical lift.

⚠

**Caution**   Be sure to push the chassis only on its frame. Do not push on any of its modules or use the handles on any modules. Do not use the handles on the side of the chassis to move or lift the chassis. Those handles are only for adjusting the position of the chassis in the rack or cabinet.

**Step 10**   After you securely position the chassis on the mechanical lift, use the mechanical lift to move the chassis to its pallet.

**Step 11**   Lower the chassis to the level of the pallet or no more than 0.25 inches (0.6 cm) above the pallet.

⚠

**Caution**   You need four persons for the following step.

**Step 12**   Use at least four persons to push the chassis onto the raised portion of the pallet. Position the chassis so that it is 4 inches (10.2 cm) away from the side of the common edge of the pallet and its raised portion.

**Step 13**   Attach two angle brackets to the raised portion of the pallet between the chassis and the pallet edge. Do not tighten the screws that hold these brackets to the pallet—you will need to adjust their placement after you place the chassis on the pallet. See Figure D-2.

*Figure D-2      Attaching the Chassis to the Shipping Pallet*
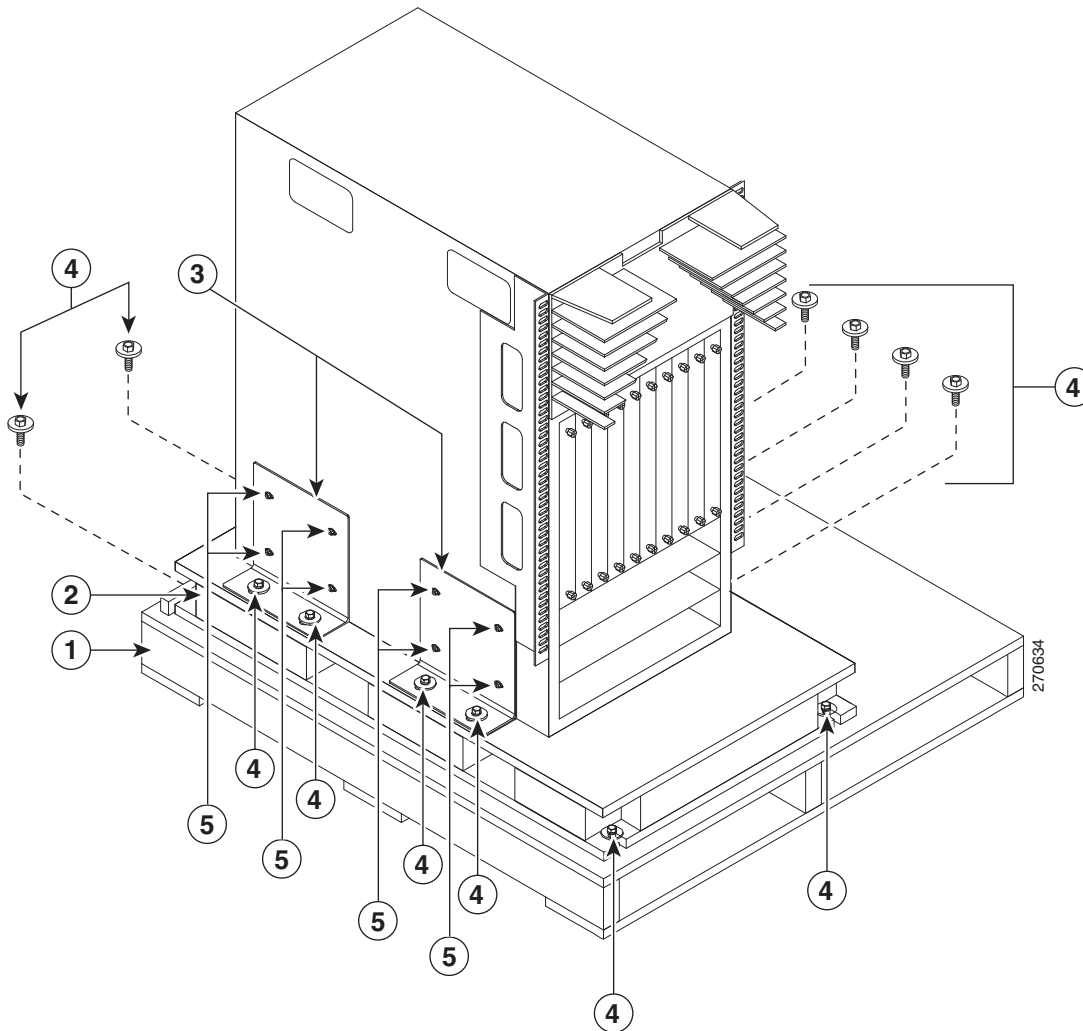


| 1 | Lower pallet | 2 | Raised portion of the pallet |
|---|---|---|---|
| 3 | Mounting brackets (two shown and two hidden on the other side of the chassis) | 4 | Bolts holding brackets to the upper pallet |
| 5 | Screws holding the chassis to the brackets | | |

**Step 14**   Align the screw holes in the side of the chassis with the screw holes in the vertical sides of the two angle brackets. Fasten the two angle brackets to the chassis by securely tightening the four screws for each bracket. See Figure D-2.

**Step 15**   Attach two more angle brackets to the pallet on the other side of the chassis. Make sure that the four screw holes on the vertical side of each bracket align with four holes in the chassis.

**Step 16**   Use four screws to securely attach each of the additional two brackets to the chassis.

**Step 17**   Securely fasten the two bolts on each of the four angle brackets to the pallet.

**Step 18**   Place the packing bag over the chassis.

**Step 19**    Place the chassis packing cushion on top of the bagged chassis as shown in View A in Figure D-3.

*Figure D-3        Packing the System Components*
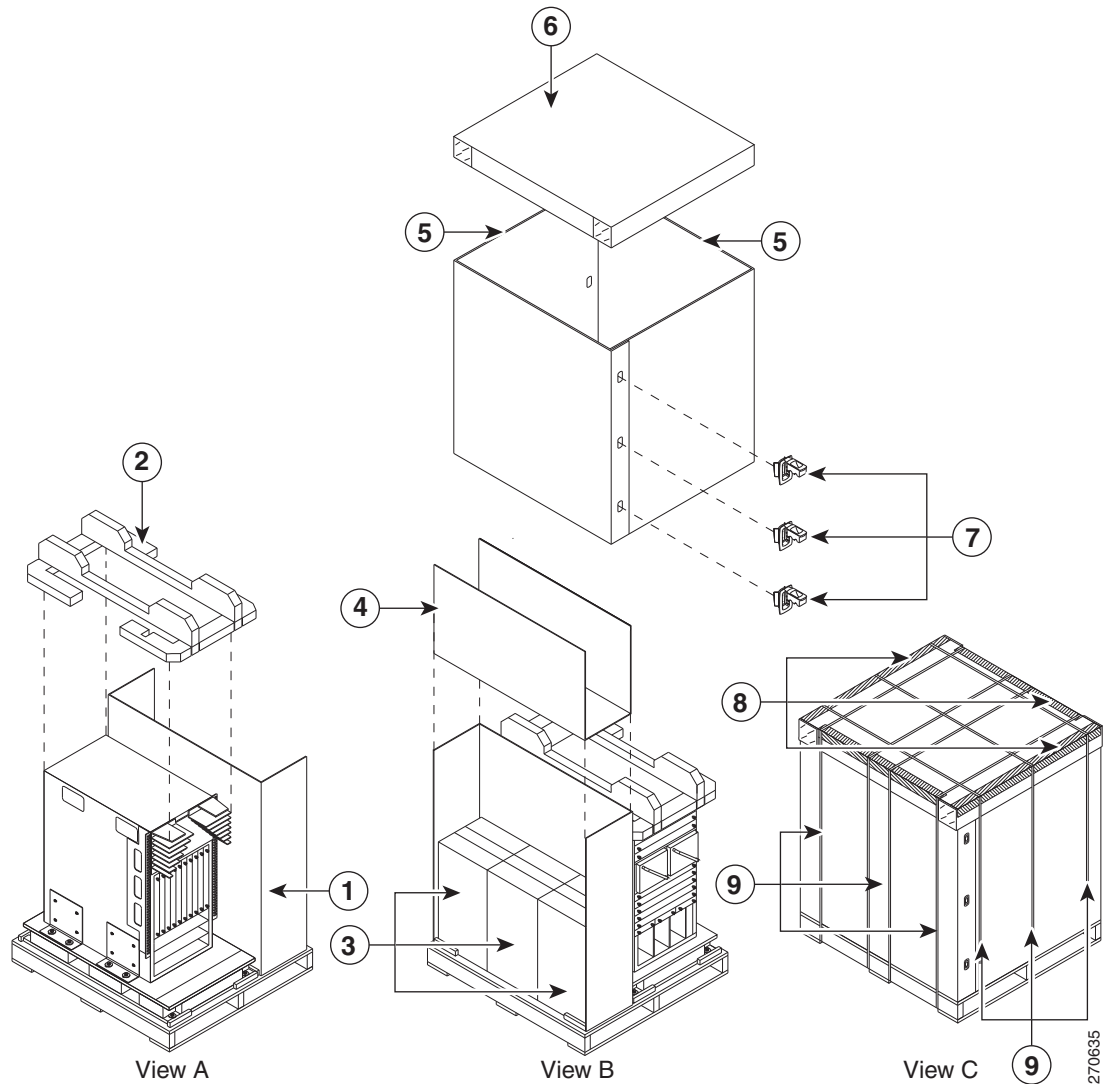


| **1** | Polyethylene cushion | **2** | Three-segment divider |
|---|---|---|---|
| **3** | Power supply boxes | **4** | Three-segment divider |
| **5** | Two J-box halves | **6** | Corrugated cardboard lid |
| **7** | Corro-Clips | **8** | Edge protectors |
| **9** | Packing straps | | |

**Step 20**    Place the larger of the two three-segment dividers beside the chassis as shown in View A in Figure D-3.

**Step 21**    Place the three power supply boxes (if you have only two power supply units for this chassis, one of the power supply boxes is empty) in the empty area beside the chassis as shown in View B in Figure D-3.

**Step 22**  Place the smaller three-segment divider in the empty area above the power supply boxes as shown in View B in Figure D-3.

**Step 23**  Remove each of the two bottom-support rails from the rack or cabinet by loosening the six screws that secure it to the vertical mounting rails on the rack or cabinet.

**Step 24**  Reassemble the accessory kit by placing the following components in the accessory kit box:

- Bottom-support rails (two) and mounting screws (20)
- Console connector cables and adapters
- Ground lugs (do not include the ground cable) and mounting screws (two per lug)
- Power cables (one or two for each power supply)

**Step 25**  Place the accessory kit box on top of the cushion that is located on top of the chassis.

**Step 26**  If your system included the optional midframe doors or air filter, pack those items in their original shipping boxes and place the boxes on top of the power supply boxes.

**Step 27**  Place one J-box half on the bottom pallet along two sides of the pallet as shown in View B of Figure D-3.

**Step 28**  Place the other J-box half on the other two sides as shown in View B of Figure D-3.

**Step 29**  Connect the two J-box pieces with six Corro-Clips (three on each seam) as shown in View B of Figure D-3.

**Step 30**  Place the corrugated cardboard lid on top of the package as shown in View B of Figure D-3.

**Step 31**  Place each of the four edge protectors on one of the top edges of the lid. See View C of Figure D-3.

**Step 32**  Secure the package to the pallet using at least seven packing straps (three in one direction and four in the other direction) as shown in View C of Figure D-3.

**A P P E N D I X E**

# Site Preparation and Maintenance Records

This appendix provides a site planning list to use when preparing your site for the Cisco Nexus 7000 system and includes these sections:

- Site Preparation Checklist, page E-1
- Contact and Site Information, page E-2
- Chassis and Module Information, page E-3

## Site Preparation Checklist

Planning the location and layout of your equipment rack or cabinet is essential for successful device operation, ventilation, and accessibility.

Table E-1 lists the site planning tasks that we recommend that you complete before you install the Cisco Nexus 7000 system. Your completion of each task ensures a successful device installation.

*Table E-1 Site Planning Checklist*

| Planning Activity | Verification Time and Date |
|---|---|
| **Space evaluation:** | |
| • Space and layout | |
| • Floor covering | |
| • Impact and vibration | |
| • Lighting | |
| • Physical access | |
| • Maintenance access | |
| **Environmental evaluation:** | |
| • Ambient temperature | |
| • Humidity | |
| • Altitude | |
| • Atmospheric contamination | |
| • Airflow | |

*Table E-1        Site Planning Checklist  (continued)*

| Planning Activity | Verification Time and Date |
|---|---|
| **Power evaluation:**<br><br>• Input power type<br><br>• Power receptacles<br><br>• Receptacle proximity to the equipment<br><br>• Dedicated (separate) circuits for power redundancy<br><br>• UPS for power failures<br><br>• Grounding: proper gauge wire and lugs<br><br>• Circuit breaker size | |
| **Grounding evaluation:**<br><br>• Data center ground | |
| **Cable and interface equipment evaluation:**<br><br>• Cable type<br><br>• Connector type<br><br>• Cable distance limitations<br><br>• Interface equipment (transceivers) | |
| **EMI evaluation:**<br><br>• Distance limitations for signaling<br><br>• Site wiring<br><br>• RFI levels | |

# Contact and Site Information

Use the following worksheet (Table E-2) to record contact and site information.

*Table E-2        Contact and Site Information*

| | |
|---|---|
| **Contact person** | |
| **Contact phone** | |
| **Contact e-mail** | |
| **Building/site name** | |
| **Data center location** | |
| **Floor location** | |
| **Address (line 1)** | |
| **Address (line 2)** | |
| **City** | |
| **State** | |

***Table E-2        Contact and Site Information***

| | |
|---|---|
| **ZIP code** | |
| **Country** | |

# Chassis and Module Information

Use the following worksheets (Table E-3 and Table E-4) to record information about the chassis and modules.

**Contract Number**

**Chassis serial number**

**Product number**

***Table E-3        Network-Related Information***

| | |
|---|---|
| **Device IP address** | |
| **Device IP netmask** | |
| **Hostname** | |
| **Domain name** | |
| **IP broadcast address** | |
| **Gateway/router address** | |
| **DNS address** | |

***Table E-4        Module Information***

| Slot | Module Type | Module Serial Number | Notes |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | Supervisor | | |
| 6 | Supervisor | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |

■  Chassis and Module Information

# I N D E X